Intellectual Repositories in Institutions of Higher Learning in India: An overview

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Abstract

The paper discusses the concept of intellectual repository (IR,) its need, importance, benefits, critical issues, major problems in establishment & maintenance of IR, role of librarians, intellectual society, academic institutions and the government. It also gives an overview of Intellectual Repository (IR) initiatives taken in the institutions of higher learning in Indian scenario.

Keywords: Institutional Repository; Scholarly Communication; Digital Content Management System; Open Source software; Digital Libraries

1. Introduction

It is a bare fact that the digital environment in all areas is a major determinant of development. Similarly, it is also true with Library and Information Science (LIS) principles, practices, and applications. The digital environment provides a conducive environment for facilitating fast and visible progress in the services, products and delivery mechanism. The gap existing between economy and the society is bridged with the help of the digital environment in short span of time. One of the major components of the digital environment is Intellectual Repository (IR), which has been in discussion and debated at professional platforms by the librarians, information scientists, academicians and administrators to drive maximum tangible benefits for achieving excellence in their respective areas. The effect of digital environment is more visible in Library and Information Centres globally as the libraries currently are not treated as the storehouse of books but considered as a gateway of knowledge resources, and the centre of creation and recreation of academic activities. It is further added that the knowledge has been recorded in various forms starting from clay tablets to papyrus, scrolls, paintings, rock scripting and modern chip technology. The ancient scholars who produce the body of knowledge kept it secret from others for centuries. The Vedas in India, which are considered as the storehouse of knowledge, were not accessible to almost seventy five percent of the population in the ancient time. Even today, the nuclear energy information is not accessible to all the people. Likewise books and other knowledge become an individual's possession and are denied to the rest of the people.

Public libraries have emerged and developed with the sole concept of democratizing the knowledge. The developed countries have control over mass media and have monopolized the means and the medium of knowledge dissemination. The big publishing houses are controlling the research and its publications all over world. The developing countries due to the crunch financial crunch are not able to sustain their knowledge centers. Most people would like to have things free of cost. It is human nature. The habit or desire to have things free has developed into a full-scale subject of concern and the solutions are being searched to find out the human desire to access knowledge free of cost. Intellectual Repository is an answer to the thrust of knowledge especially for those who have been

deprived of it due to a number of reasons. The process of empowering the faculty and researchers through knowledge sharing in form of IR in recent time has taken a big leap.

2. Concept of Intellectual Repository (IR)

An IR is a system in which a common consensus is developed among common interest oriented persons to share their contributions that are in their possession in form of articles and research papers. It is considered the wealth of everybody among such group. The contributor loses her/his claim over the knowledge once he/she has contributed the article thereby making it available to those who are in need of the related knowledge. The recipients are benefited by the quality literature of eminent writers by paying nothing and violating no rule of any land. In this way an Intellectual Repository is a continuous amalgamation of various activities including contributing articles, communicating to the repository and participating in building the IR.

Lynch Clifford expresses his views on Intellectual Repository, "a university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members" (Lynch, 2003). It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation access or distribution." The crucial word Lynch uses here is "community". The term institutional repository implies a community based service although repository developers interpret this in different ways.

3. Needs of Intellectual Repository

Since India is coming out from the shadows of backwardness and the agony of LDC (Less Developed Country) it is needed that the support for her nourishment must come from all corners of the intellectual society. The shrinking budgetary support, increasing cost of reading material and the mind set and attitudinal patterns of the managers in institution of higher learning clearly indicate that some alternatives to meet these challenges have to be found out. Institutional Repository should be renamed as *"Intellectual Repository"* as it is more appropriate and comprehensive term. It is through this system that quality of intellectual output can be measured since till now there is no quality measurement method for the publishers and contributors. Therefore, there is a great need of such intellectual repositories in institutions of higher learning so that a network of intellectual repository access can be explored.

4. Benefits of Institutional Repository

Prosser (2003) highlights the benefits of an institutional repository as under:
   a) The institutional repository model provides a means for institutions to create archives and make available their wealth of knowledge. It allows individuals (scientists and researchers) to self-archive their own material.
   b) For the individuals the institutional repository acts as a central archive for their work, representing a CV that provides a complete list of their research over the years. Because it is open access, it increases the dissemination and impact of their work.
   c) For institutions it acts to preserve their intellectual wealth. It increases their visibility and prestige, and can act as an advertisement for funding sources and industrial sponsors.

    d) For society it provides access to the world's research and ensures the long term preservation of research.

5. IR Initiatives in Indian Scenario

India is not lacking behind in building intellectual repositories because many premiers' institutions like IITs, IIMs, IISc and Universities have already taken the initiative of IR. The various government and professional bodies are also involved to help these institutions and universities for building intellectual repositories. Recently, the Government of India has setup the Knowledge Commission (KC) to prepare a clear cut road map for the institutions of higher learning in India for taking the initiative like upgradation of libraries and building Intellectual Repository. Similarly, The University Grant Commission, (UGC) has already setup a separate agency namely Information Library Network (INFLIBNET) with the objective of modernization of libraries and setting up knowledge centres for accessing and sharing the vast knowledge of research. The INFLIBNET is providing the specialized training and networking of libraries among its member institutions and universities for selecting, managing, preserving and disseminating scholarly materials. Some professional associations and societies like DELNET, SALIS and ILA are also involved in modernization of libraries, training and setting up the IRs. Table 1 shows the growth of IRs in India at a glance.

Table 1: Growth of IR in India

Name	Host Institution	URL	No. of Items	Types of Documents	Software Used
Greenstone Digital Library@ IITK	IIT Kanpur	www.cse.iitk.ac.in/gsdl/cgi-bin/library	797	Theses, Dissertation and Project of CS	Greenstone
Eprint@du	Delhi University	http://eprints.du.ac.in	165	Articles, Research papers	Eprints
IITB@dspace	IIT Bombay	http://dspace.library.iitb.ac.in/dspace	14	Faculty Publication	Dspace
Digital Repository of DCE	Delhi College of Engineering	http://202.141.12.109/dspace/	321	Research papers, dissertation, thesis, articles, project reports	Dspace
Librarian's Digital Library (LDL)	Documentation Research & Training Centre (DRTC)	https://drtc.isibang.ac.in/	330	Research Papers, Articles, Reports, etc.	DSpace
DSpace at GBPUAT University	G.B. Pant University of Agriculture & Technology	http://202.141.116.205/dspace/	82	Research Papers, Articles, Reports, Thesis, etc.	DSpace
IIA Repository	Indian Institute of Astrophysics	http://prints.iiap.res.in/	1386	Research Papers, Articles, Reports, Thesis, etc.	DSpace
EPrints@IIITA	Indian Institute of Information, Allahabad	http://eprints.iiita.ac.in/	22	Research Papers, Articles,	EPrints
DSpace@IIMK	Indian Institute of Management, Kozhikode (IIMK)	http://dspace.iimk.ac.in/	227	Research Papers, Articles, Reports, etc.	DSpace
EPrints@IIMK	Indian Institute of Management, Kozhikode (IIMK)	http://eprints.iimk.ac.in/	25	Research Papers, Articles,	EPrints
EPrints@IISC	Indian Institute of Science (IISC)	http://eprints.iisc.ernet.in/	6990	Research Papers, Articles,	EPrints
ETD@IISc	Indian Institute of Science (IISC)	http://etd.ncsi.iisc.ernet.in/	224	Theses & Dissertations	DSpace
EPrints@IITD	Indian Institute of Technology, Delhi (IITD)	http://eprint.iitd.ac.in/dspace/	2138	Research Papers, Articles, Reports, etc.	DSpace

DSpace at INSA	Indian National Science Academy (INSA)	http://61.16.154.195/dspace/	818	Conference Papers, Articles, Reports,	DSpace
ISI Library, Bangalore	Indian Statistical Institute, Bangalore	http://library.isibang.ac.in:8 0 80/dspace/	10	Research Papers, Articles, Reports, etc.	DSpace
DSpace at INFLIBNET	INFLIBNET	http://dspace.inflibnet.ac.in	428	Research Papers, Articles, Reports, etc.	DSpace
NAL Institutional Repository	National Aerospace Laboratories (NAL)	http://nal-ir.nal.res.in/	2428	Research Papers, Articles, Reports, etc.	EPrints
DSpace at NCRA	National Centre for Radio Astrophysics	http://ncralib.ncra.tifr.res.in/ dspace/	22	Research Papers, Articles, Reports, Thesis, etc.	DSpace
EPrints at NCL	National Chemical Laboratory (NCL)	http://dspace.ncl.res.in/	357	Theses, Research Papers, Articles, Reports, etc.	DSpace
OpenMED@NIC	National Informatics Centre (NIC)	http://openmed.nic.in/	1474	Research Papers, Articles, Reports, etc.	EPrints
Digital Repository Service of NIO	National Institute of Oceanography	http://drs.nio.org/drs/	579	Journal articles, conference proceeding	DSpace
Dspace@NITR	National Institute of Technology, Rourkela	http://dspace.nitrkl.ac.in/dsp ace/	223	Theses, Research Papers, Articles, Reports, etc.	DSpace
Digital Repository of RRI	Raman Research Institute	http://dspace.rri.res.in/	2230	Research Papers, Articles, Reports, Thesis, etc.	DSpace
Vidyanidhi	University of Mysore	http://www.vidyanidhi.org.i n /	1835	Theses & Dissertations	DSpace

6. IR at Learning Resource Centre, JIIT University

The Jaypee Institute of Information Technology University, Noida (UP) India is a leading university in the field of technical education in India. The vision of this university is *"To become a centre of excellence in the field of IT Education & Training, comparable to the best in the world for producing professionals who shall be leaders in innovation"*. The faculty members, research scholars, staff and students of this university produce a lot of intellectual assets in form of research papers, project reports, books, conference papers, thesis, dissertations and articles. It is necessary to preserve, manage and make it accessible to its community and society for sharing and visualizing their innovations. The Learning Resource Centre known as LRC has taken the initiative to design & development of IR model for managing, preserving and disseminating the intellectual asset among its community. A model of IR has been developed namely "LRC-DRS". Initially, it is accessible on local areas network but very soon will be connected to Internet. Screen shot of IR model of the LRC-DRS homepage is presented in Figure 1.

7. Critical Issues related to IR

Some critical issues have been identified during the experiment of IR at JIIT University. It is necessary to keep in mind these issues before taking the initiative in the respective institutions. These relate to copyright, lack of skills, capacity building, selection of software, hardware, digitization of content, organizational commitment and selection of contents.

8. Major Problems of IRs in India

Whenever an IR initiative is undertaken, it is first planned keeping in view the objectives of the respective institution as well as initiative. Then a prototype is developed, tested and implemented. After satisfactory results are achieved, the intellectual repository is developed and implemented at a higher scale and again tested. Some institutional repositories that have been visited to gather information are not presently accessible through the Internet due to various reasons.
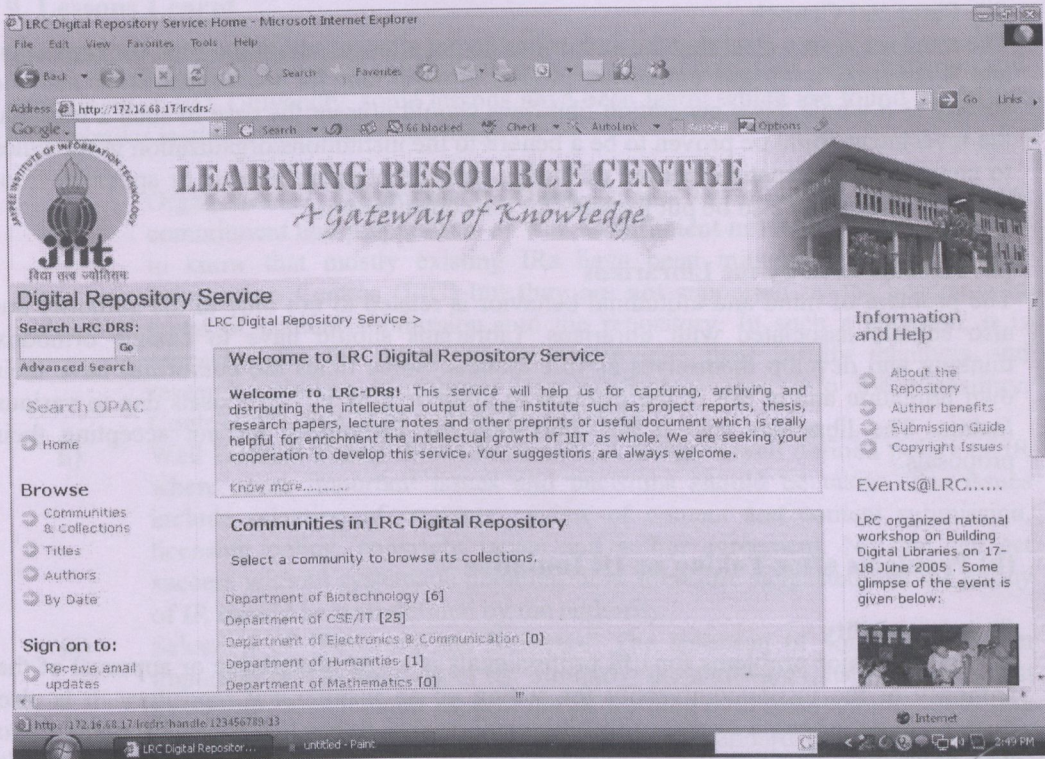

Figure 1: Homepage of LRC-DRS at JIIT University

(a) Selected Problems and Solutions of IR Initiative
As mentioned earlier the mindset and attitude of the managers and the management is steeped towards the traditional thought. It is very difficult to convince the managers why IR is necessary. Some areas of mindset and the solutions for over coming them are as follows:

(i) Mindset of Authority
The intellectual repository proposal generally comes through the library manager. The higher authority of the institutions is hardly convinced while discussing the matter, in the absence of the librarian, that a librarian can do this extra ordinary intellectual work. It is due to the fact that the proper recognition of the library profession has not yet been taken in the society, however the new crop of librarians is highly intelligent, technically sound and technologically well equipped. These librarians, who have open mind and are committed with the library profession, are now ready to take the leap. Therefore, the librarians should take the responsibility of convincing the higher authority about the IR initiative.

(ii) Lack of Presentation Skills

It has been observed that these librarians in general have rather poor presentation skills. from the decade. Therefore, they are not able to convince the authority to take up a technological initiative such as an IR in their respective organizations. This has led to the belief that librarians are not at all fit to take up new technological initiative. This perception needs to be changed by the new generation librarians. Through audio visuals and with other presentation tools, the higher authority should be shown the initiatives in the best possible way.

(iii) Financial Crunch

The mind set is very clear that the authorities do not allocate additional fund for expansion and innovation until and unless the project is important for the organization and the society as a whole. New generation librarians should present the case in such a way that the investment could be proven to be a benefit to the institutions/organization in the times to come. The alternative method of budget and the possible income or sponsors from various sources can also be put forward for the consideration.

(iv) Introspection by the Librarians

The problem of mind and attitudinal behavior is related to not only to the authority but also equally associated with librarians. Librarians should have to change orthodox thinking and develop themselves as role models. Some times the authorities have their own limitation and/or not in the position to approve new ICT proposals due to various factors. The librarians should not think that the authorities are not accepting their proposals.

(b) Problems after Taking an IR Initiative

(i) Acceptability

One of the major problems for LIS professionals is to get acceptance or approval of the authority of the institute/university for setting up an institutional repository. It is also difficult to get research output of faculty members and research scholars for putting into the intellectual repository of the university or institute. Some times library professionals are not successful in convincing the intellectual community of the importance of an IR repository and its role.

(ii) Visibility

It has been noticed that many organizations in India have established the intellectual repository but they, such as the defence department and other research institutions, are not interested to share the information with the society.

(iii) Sustainability

The establishment of institutional repository is a lengthy and difficult task because a lot of efforts and investment is involved. Therefore, it is necessary to maintain and sustain the IR for long term preservation. Maintenance of an IR includes reviewing of the contents, revising and updating of the hardware, and sustaining the accessibility. It is observed through analytical web survey that most of institutions and universities are not updating, reviewing and maintaining their IR timely.

(iv) Accessibility

The library professionals responsible for maintaining intellectual repositories should regularly review their accessibility in order to minimize the following problems. They can also invite feedbacks from the users to provide more user-friendly access to the IR resource materials.

- The uniform resource locator (URL) changes from time to time but librarians do not update the links on the IR web pages.
- Due to power failure and unforeseen circumstances, the web server is not operational 24/7.
- There is a total gap between the service discontinuation and the webpage update.
- Some time, the server does not work due to under maintenance.

9. Lessons Learnt

Based on review of literature, analytical web survey, discussions with experts, and experiment at JIIT University, some lessons have been learnt which are found useful for other similar institutions of higher learning.

i)   Organizational Commitment: There should be a strong organizational commitment and preparation, as well as sufficient infrastructure. It has come to know that mostly existing IRs have been initiated by Libraries and Information Centres (LIC) but they are not supported by the academia in terms of content submission into the repository. In such a situation, it is necessary for the organizations to convince their faculty members and research scholars to submit their intellectual asset into the repository. Contributors should be suitability rewarded.

ii)   Well Defined Policy: Institutions should design a well defined policy of IR where some important issues and decisions should be taken. The issues include selection of contents, review of content and content submission, licensing policy, copyright issues and author agreement. No one can get success without systematic planning. It is, therefore suggested that the policy of IR should be well defined by the authority.

iii)   Selection of Hardware and Software: The selection of software plays an important role in building of IR. Similarly, the hardware must be of the latest technology which could support the IR for long term sustainability. Selection of software should be done on the basis of standard parameters such as customization, network configuration, standard DBMS and user friendly interface. Similarly, hardware should be the latest with sufficient speed & storage. It is realized during the web survey that some IRs are not accessible 24/7 due to reasons such as load capacity of server and poor bandwidth.

iv)   Selection of Content: The content is most important because the quality of content gives value to the repository and as well as increase the prestige and visibility of the organization. It is therefore suggested that the selection of contents should be done carefully and should be reviewed by the subject experts.

v)   Periodical Training: All the staff members and users of repository should be well trained for the optimal use and better result; otherwise all the investment and effort on IR will go to waste.

vi)   Critical Review and Feedback: The critical review and feedback help the developers of IR to know the weakness and drawbacks of the system. It has come to notice during the web survey that many IRs are not reviewed and maintained regularly after the implementation. Therefore, the system of cross verification, feedbacks and review of IR are very essential for its success.

vii)   Regular Maintenance: The maintenance is very necessary for all types of activities. The infrastructure, hardware and software should be properly maintained because establishment of IR involved a lot efforts and investment.

10. Conclusion

The Learning Resource Centres (LRCs), previously known as libraries, are increasingly facing the problem of hike in the subscription rates of journals. Similarly, other resource materials have also become very costly and are becoming out of reach of the libraries. The users pressure on libraries especially in the institutions of higher learning has increased manifold and as a result the libraries are required to gear themselves to meet their comprehensive and enhanced information needs. On the other hand, new thrust areas are also coming up and libraries need to satisfy these new information needs as well. Thus, the LRCs have to consider various possible alternatives. In this direction, an IR system has emerged as a viable device for meeting challenges of the increasing cost and to meet the users needs. Indian initiatives have proven that there is not much problem in initiating the IR in institutions of higher learning. Some lessons have been learnt which could be useful for other similar institutions of higher learning that would like to take up an IR initiative.

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