Application of ICTs in Indian Libraries

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GENISIS OF DIGITAL EDUCATION IN INDIA

Presently, development of digital libraries in India is in nascent state. However, efforts are being made to develop network based learning environment for the distance learners. The Committee for utilizing Satellite Communication system for Distance Education Network appointed by the Department of Education, Ministry of Human Resource Development has come up with the proposal of setting up of Indian Training and Education Network for Development (INTEND). The network will be used for value added services viz e-mail, down loading of lectures/ lessons from the hub station to remote classes, provision of Internet services through gateways, library services, video conferencing etc. The implementation of the INTEND is planned in two phases, spreading over the next five years.

As a part of the INTEND project the open and distance education system in India has decided to set up the Open Education Network (OPENET), a network of physical, intellectual and academic resources of all the open and distance education institutions in the country. The technical system of INTEND-OPENET will be comprise:

1. National hub center at IGNOU (Indira Gandhi National Open University) at New Delhi.
2. Regional hubs in the State Open universities and state capitals.
3. V-SAT's of varying capabilities in universities, regional centers, study centers and other partner institutions.

In the first phase the backbone comprising the national hub and 100 sites in the towns will be developed while in the second phase the regional hubs will be strengthened by extending the outreach to 500 district centers, 5000 block centers and 100,000 village clusters. In the library networking frontier, INFLIBNET has been established to link the all university's libraries and R&D institutions in the country. The INFLIBNET will be integrated with the INTEND-OPNET in the future. Apart from the INFLIBNET, the other major efforts in library networking include several metropolitan networks viz, DELNET (Developing Library Network), CALIBNET (Calcutta Library Network), MALIBNET (Madras Library Network), BONET (Bombay Library Network), etc.

Thus the backbone needed for developing digital libraries for the distance education already exists in the country. Only needs to be done immediately, is to make the library resources available in the digital form and reorient the services for the network environment. The collaboration of all the distance education institutions in the country is also needed for developing digital libraries for distance learners. Indira Gandhi National Open University being an apex body of distance education in the country has a major role to play in this direction. The INTEND-OPENET project really visualized the importance of setting up digital libraries for the distance learners.

Presently IGNOU is an open university only which has rich resources and very strong infrastructure along with Information Technology (IT) application to transmit their educational programs “Gyan Darshan” through Doordarshan and “Gyan Vani) via 188 AIR station in Scheduled time and **“eGyanKosh”-** a National Digital Repository to store, index, preserve, distribute and share the digital learning resources developed by the Open and Distance Learning Institutions in the country .

1 Computer Literacy and Social on Schools

In 1984, a project named (Computer Literacy And Social on Schools) started to make a computer literacy as compulsory project for class XI and XII by the Indian government.

In the 7th five year plan and 8th five year plan 2598 school and 2371 schools respectively started computer literacy having foundation step towards e learning in India.

During year 2003, with the aim to take at leaving to schools in every district across the country, a project was started which will cover 6,00,000 school in India.

2 CONTRY WIDE CLASSROOMS

University Grants Commission Higher Education Project was launched by UGC in collaboration with Indian National Satellite System (INSAT) named CONTRY WIDE CLASSROOMS in 1984 to upgrade and enrich quality of education .

3 Net varsity

The 1st online education enterprise Net varsity with private initiative was taken by National Institute of Information Technology (NIIT) in 1996

4 National Task Force on Information Technology and Software Development

After what NIIT started in 90s some other private farms came in to the market with a new concept to open up the real impetus for e-learning came from the National Task Force on Information Technology and Software Development (NTFITSD) constituted by the Prime Minister of India in 1998. The Task Force report presents the master plan that India has in place as a long term policy for capacity building of institutions, human resource development in IT related areas, and use of ICTs in education.

5 Teaching Shoppe

After what NIIT started in 90s some other private farms came in to the market with a new concept to open up Teaching shoppe (TShopee) for the benefit in the field of school level education and for preparing students for competitive examinations like the medical and engineering entrance tests.

6 Electronics Engineering Diploma Programme

At the Yashwantrao Chavan Maharastra Open University (YCMOU) e-learning is used as a learner support mechanism especially for its Electronics Engineering Diploma Programme (EEDP). Students use a discussion forum to discuss concepts and clarify doubts.

7 IGN0U

In 1991, Indira Gandhi National Open University started telecasting educational programmes on Doordarshan . In 1999, it started to virtual campus initiative with to programmes the Bachelor of Information Technology (BIT) and Advance Diploma in Information Technology (ADIT) (in collaboration with Edexel, UK, and India). Gyandaeshan education channel was started in 2000 to telecast educational program round the clock in joint collobration of Govt of India, Prasar Bharti and IGNOU . Other online initiatives of IGNOU includes (OCPFS) in collaboration with the Ministry of Health and Family Welfare, Government of India, a web-enhanced training package on the Windows version of the UNESCOs popular database management package CDS/ISIS, and the Web-based Training Programme for the min career diplomat of the Government of India .

8 Participation in Discussion Forum

In 2001, the School of Social Sciences at the Indira Gandhi National Open University (IGNOU) started a Post Graduate Certificate in Participatory Management of Displacement, Resettlement and Rehabilitation with the support of the World Bank as a fully online programme that included both synchronous and asynchronous learning opportunities. It is a first of its kind programme, where Participation in Discussion Forum (PDF) is used as a peer evaluation mechanism.

9 National Programme on Technology Enhanced Learning

Other Arguably, the most talked about Indian e-Learning project is the NPTEL project. NPTEL was conceived in 1999 and funded by MHRD (Ministry of Human Resource and Development). Under the project, 7 IITs (Indian Institutes of Technology) and IISc (Indian Institute of Science) Bangalore, worked on the Rs 20.5 crore project from 2003 to 2006, to create 112 video courses and 116 web courses under phase- I. All these courses are on undergraduate engineering topics, and made to meet most of the requirements of an engineering undergraduate program (at any Indian university). These courses are available to students, working professionals and colleges (both government-aided and private) at virtually no cost or very low cost . In phase- II 500 web courses and 516 video courses was already developed.

10 Amrita Vishwa Vidyapeetham

This initiative launched in 2004 uses satellite technology to connect 4 campuses of Amrita University located in 4 cities of South India. There is collaboration with US universities also, and the project was expected to expand to 200 universities. It was based on technological support from ISRO.

11 BITS Pilani

It has established a virtual university, with DIT sponsorship. BITS has been one of the pioneers in distance education. BITS has been providing courses for working professionals in distance education mode leveraging technology .

12 Jadavpur University

It started a new inter-disciplinary Masters in Multimedia Development course in 2000-01, as a distance education course using print material, CD ROM, and web-based learning environment. Technology was provided by CDAC Kolkata and CMC.

13 Aligarh Muslim University

It worked on a project in 2006-07 to take its distance education program online, starting with a few courses which are industry-relevant.

14 Central Institute of English and Foreign Language, Hyderabad

It had a project for online learning software set-up and usage in 2006.

15 Another commercially successful initiative is MBA Programs being conducted for Working Professionals using Satellite Video technology, by institutions like IIM-Calcutta, IIM-Calicut, IIT-Delhi, IIFT, IIT Bombay, XLRI etc. This was done by these institutions using services provided by companies like HughesNet (formerly Hughes Directway), Reliance Infocom and now NIIT Imperia.

16 Many other universities and colleges had had small projects/ initiatives where they boughtSoftware /hardware and other technology products, got content development done for e-Learning launch. It included the likes of Hyderabad University, Kerala University, Terna College Mumbai, MDI Gurgaon, etc.

17 In India, the University of Madras opened a Virtual University in partnership with University of Mumbai and University of Calcutta. This Virtual University system has led to the commencement of 10 joint degrees, post graduate and Ph.D programmes

Indian institute of management Banglore (IIM-B) used E-Learning face to face teaching.

World‟s first educational satellite was started in India in 20th September 2001 named EDUSAT to provide education to millions of people at their door step. It enables information to be broadcasted in local language and dévoted to long distance learning in India.UGC organized a dialogue on “Enhancing Higher Education Through E-learning” in collaboration with Commonwealth of Learning (CCOL) vancover from M-19 November 2003 at Delhi.

Digital Library Repository from India

S. N	IRs	Host Institutions	URL	Collection	Origin Year
1	E-LIS	E print in Library & Information Science	http://eprints.rclis.org/information.html	11500	2003
2	Dspace@IIA	Indian Institute of Astrophysics	http://prints.iiap.res.in/	3060	2004
3	Eprint@IISc	Indian Institute of Science, Bangalore	http://eprints.iisc.ernet.in/	34363	2004
4	Librarians' Digital Library	Documentation Research and Training Centre, Bangalore	https://drtc.isibang.ac.in/	390	2004
5	IR@ NAL	National Aerospace Laboratory, Bangalore	http://nal-ir.nal.res.in/	5379	2004
6	ETD@IISC	Indian Institute of Science, Bangalore	http://etd.ncsi.iisc.ernet.in/	1807	2005
7	Dspace @ NCL	National Chemical Laboratory, Pune	http://dspace.ncl.res.in/dspace/	407	2005
8	EPrints@IITD	Indian Institute of Technology, Delhi	http://eprint.iitd.ac.in/dspace/	2143	2005

9	Dspace@NITR	NIT, Rourkela	http://dspace.nitrkl.ac.in/dspace/	1740	2005
10	RRI Digital Repository	Raman Research Institute, Bangalore	http://dspace.rri.res.in/	5053	2005
11	Dspace@TU	Thapar University, Patiala	http://dspace.thapar.edu:8080/dspace/	1192	2005
12	DU @Eprint Archive	University of Delhi	http://eprints.du.ac.in/	178	2005
13	Open MED	NIC, New Delhi	http://openmed.nic.in/	2707	2005
14	Shodhganga@INFLIBNET	INFLIBNET Centre	http://ietd.inflibnet.ac.in	566	2005
15	Dspace@IIMK	Indian Institute of Management, Kozhikode	http://dspace.iimk.ac.in	503	2005
16	Bioinformation	Bioinformation	http://www.bioinformation.net/index.htm	NA	2006
17	Digital Repository Service	National Institute of Oceanography, Goa	http://drs.nio.org/drs/index.jsp	4169	2006

18	Dspace @ INFLIBNET	INFLIBNET, Ahemedabad	http://ir.inflibnet.ac.in	1144	2006
19	DSpace@IBSA	ICFAI Business School, Ahmedabad	http://202.131.96 .59:8080/dspace/	212	2006
20	Dspace@MDI	Management Development Institute, Gurgoan	http://dspace.mdi .ac.in/dspace/	325	2006
21	Eprint@RGCB	Rajiv Gandhi Center for Biotechnology	http://www.rgcb.res.in/	NA	2006
22	Digital Library	Indian Statistical Institute, Bangalore	http://drtc.isibang.ac.in /DRTC/	191	2006
23	Kautilya Digital Repository	Indira Gandhi Institute of Development Research	http://oii.igidr.ac.in:808 0/dspace/index.jsp	204	2006
24	Dspace @ Ncaor	National Center for Antarctic Research, Goa	http://dspace.ncaor.org :8080/dspace/	600	2006
25	Eprint@IIMK	Indian Institute of Management, Kozhikode	http://eprints.iim k.ac.in/	493	2006
26	Eprint@IIITA	Indian Institute of Information Technology	http://eprints.iiita.ac.in /	1256	2006

27	Siddha Articles	Bethesda CAM Research Center	http://www.freewebs.com/siddhapapers/	NA	2007
28	Digital Library	Sri Venkateswara University, Tirupati	http://www.svuniversity.in/colleges/index.html	1201	2007
29	eGyankosh	IGNOU, New Delhi	http://www.egyankosh.ac.in/	30000	2007
30	DEC-Repository	Delhi College of Engineering, Delhi	http://202.141.12.109/dspace	326	2007
31	Dspace@ipu	Guru Gobind Singh Indraprastha University, Delhi	http://14.139.60.216:8080/xmlui/	1314	2007
32	DKR@CDRI	Central Drug Research Institute, Lucknow	http://dkr.cdri.res.in:8080/dspace	646	2007
33	Knowledge Repository	University of Kashmir	http://dspaces.uok.edu.in:8080/dspace/	334	2007
34	Catalysis Database	National Center for Catalysis Research	http://203.199.213.48/	1606	2007

35	Dspace @BMA	Bangalore Management Academy, Banglore	http://bma.ac.in:8080/dspace	825	2008
36	Dspace @UOHYD	University of Hyderabad	http://digilib.uohyd.ernet.in/dspace	1512	2008
37	Dyuthi @ CUSAT	Cochin University of Science and Technology	http://dyuthi.cusat.ac.in/xmlui/	1237	2008
38	KR@CIMAP	Central Institute of Medicinal and Aromatic Plants, Lucknow	http://kr.cimap.res.in/index.jsp	120	2008
39	(NOPR)	NISCAIR online Periodicals Repositories, Delhi	http://nopr.niscair.res.in	13897	2008
40	Dspace @ BMA	Bangalore Management Academy, Bangalore	http://bma.ac.in:8080/dspace	825	2008
41	DSpace @ Vidyanidhi	University of Mysore	http://dspace.vidyanidhi.org.in:8080/dspace/	5480	2008
42	ePrints@NII	National Institute of Immunology	http://eprints.nii.res.in/	10	2008
43	Eprints@SBT MKU	School of Biotechnology, Madurai Kamaraj University	http://eprints.bicmku.in/	92	2008

44	EPrints@SVNIT	SardarVallabhbai National Institute of Technology, Surat	http://eprints.svnit.ac.in/	14	2008
45	MGU - Online THESIS	Mahatma Gandhi University	http://roar.eprints.org/823/	800	2008
46	E-Repository @ IPM	Institute of Petroleum Management, Gandhinagar	http://203.77.192.116:8080/xmlui	64	2009
47	Dspace@NCRA	National Centre for Radio Astrophysics	http://ncralib.ncra.tifr.res.in:8080/dspace/	413	2009
48	IMScEprint Archive	The Institute of Mathematical Sciences, Chennai	https://www.imsc.res.in/eprints/	43	2009
49	Eprint@IMMT	Institute of Minerals and Materials Technology, Bhubaneswar	http://eprints.immt.res.in/	33	2009
50	Eprints @ MDRF	Madras Diabetes Research Foundation	http://mdrf-eprints.in/	498	2009
51	Eprint@NML	National Metallurgical Laboratory	http://eprints.nmlindia.org	1549	2009

52	Eprint @IARI	Indian Agriculture Research Institute , New Delhi	http://eprints.iari.res.in/	126	2009
53	Explorations	CSIR unit for Research & Development of Information Products, Pune	http://eprints.csirexplorations.com/	1100	2009
54	eprints@ SBT MKU	School of Biotechnology & Madurai Kamaraj University	http://eprints.mkuniversity.in/	NA	2009
55	Ethesis @NITR	National Institute of Technology, Rourkela	http://ethesis.nitrkl.ac.in/	804	2009
56	PRL Repository	Physical Research Laboratory Library	http://www.prl.res.in/~library	1400	2009
57	AllamaIqbal LibraryDigital Collection	University of Kashmir	http://www.kashmiruniversity.net/library.aspx	NA	2009
58	Dspace@IITB	Indian Institute of Technology Bombay	http://dspace.library.iitb.ac.in	1659	2010
59	OpenAgri	Indian Council for Agricultural Research and IITK	http://agropedia.iitk.ac.in/openaccess/	23789	2010

60	NEHU Digital Library	North-Eastern Hill University, shilling	http://dspace.nehu.ac.in/jspui/	1569	2010
61	Dspace@SNGCE	Sree Narayana Gurukulam college of Engineering, Gurukulam	http://dspace.sngce.ac.in/browse?type=title	1104	2010
62	IIOAB	Institute of Interactive Omics and Applied Biotechnology	http://www.iioab-journal.webs.com/	NA	2010
63	DSpace@IISR	Indian Institute of Spices Research, Kozhikode	http://220.227.138.214:8080/dspace/handle/123456789/121	449	2010
64	Eprint@CMFRI	Central Marine Fisheries Research Institute	http://eprints.cmfri.org.in/	4239	2010
65	National Science Digital Library	National Institute of Science communication and Information Resources, Delhi	http://nsdl.niscair.res.in	577	2010
66	DSpace@PDPU	Pandit Deendayal Petroleum University, Gujrat	http://library.pdpu.ac.in:8080/xmlui/	100	2010
67	EPrint@ATREE	Ashoka Trust for Research in Ecology and the Environment	http://eprints.atree.org/	247	2010

68	OAE-Repositories @IIHR	Indian Institute of Horticulture Research, Bengaluru	http://www.erepo.iihr.ernet.in/	Na	2011
69	DSpace@VPM	Vidhya Prasarak Mandal, Thane	http://dspace.vpmthane.org:8080/jspui/index.jsp	1122	2011
70	DSpace@IITR	Indian Institute of Technology, Roorkee	http://bhagirathi.iitr.ac.in/dspace	1535	2011
71	DSpace@SDMCET	SDM College Of Engineering and Technology Dharwad	http://210.212.198.149:8080/jspui/	60	2011
72	Eprint@IAS	Indian Academy of Science, Bangalore	http://repository.ias.ac.in/index.html	NA	2011
73	DSpace@CUSAT	Cochin University of Science and Technology	http://dspace.cusat.ac.in/	NA	2011
74	Eprint@IIPD	Indian Institute of Petroleum, Dehradun	http://library.iip.res.in:8080/dspace/	453	2011
75	DSpace@GIPE	Gokhale Institute of Politics and Economics, Pune	http://dspace.gipe.ac.in/jspui/	9191	2011

76	Eprint@IICB	Indian Institute of Chemical Biology, Kolkata	http://www.eprints.iicb.res.in/	1296	2011
77	Rice Knowledge Management Portal	Directorate of Rice Research, Hyderabad	http://www.rkmp.co.in	1257	2011
78	Dspce@IMSC	The Institute of Mathematical Sciences, Chennai	http://www.imsc.res.in/xmlui/	278	2012
79	Etheses@SU	Saurashtra University, Rajkot	http://etheses.saurashtrauniversity.edu/	985	2012
80	OAR@ICRISAT	International Crops Research Institute for the Semi-Arid Tropics, Hyderabad	http://oar.icrisat.org/	5871	2012
81	ETD@UASD	University Of Agricultural Sciences, Dharwad	http://etd.uasd.edu/	1116	2012
82	Eprints@CSIR-AMPRI	Advanced Materials and Processes Research Institute (AMPRI), Bhopal	http://eprints.ampri.res.in/	31	2012
83	Dspace@IUCAA	Inter-University Centre for Astronomy and Astrophysics, Pune	http://www.iucaa.ernet.in:8080/jspui/	NA	2012

Figure-1: Yearwise Development of DLRs

Table-3

	Year	No. of IRs
IRs	2003	1
IRs	2004	4
IRs	2005	10
IRs	2006	11
IRs	2007	8
IRs	2008	11
IRs	2009	12
IRs	2010	9
IRs	2011	10
IRs	2012	6

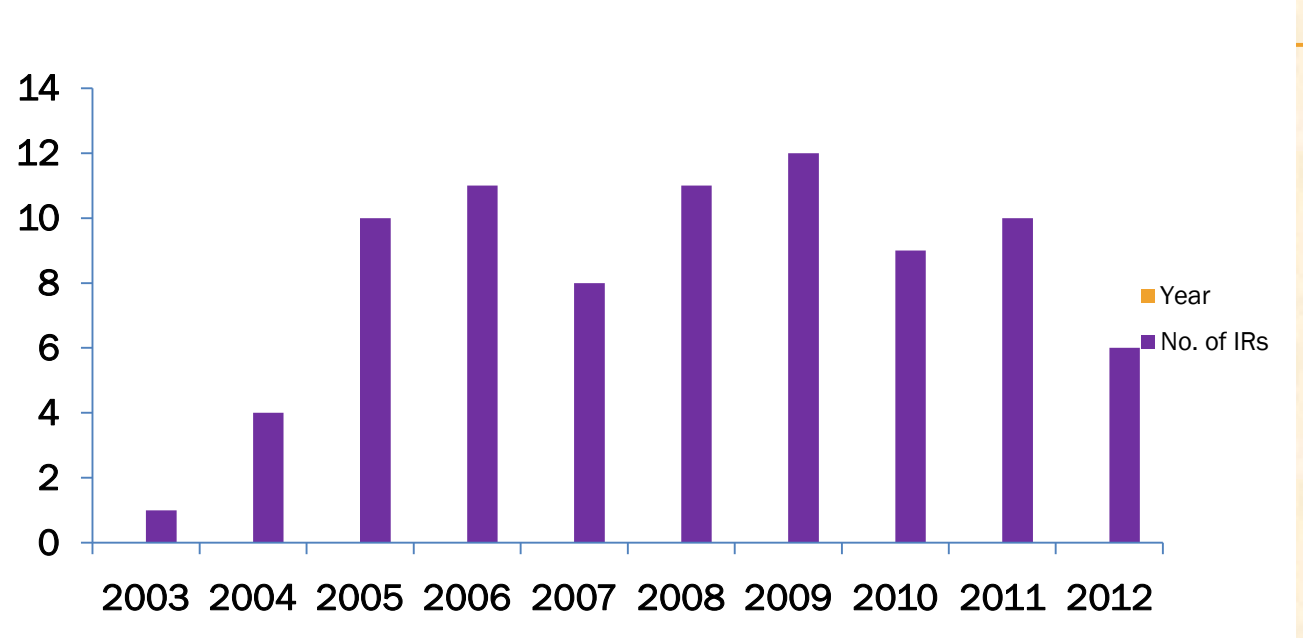

Table-3 & Figure-1- reveals that E print in Library & Information Science - (E-LIS) Digital repository is the oldest repository which was established in 2003, while Inter-University Centre for Astronomy and Astrophysics, Pune - Dspace@IUCAA) Digital repository is the youngest one established in 2012.

Digital Library Repositories from India among 1438 Top International Digital Repositories Table-4

S. N	Ranking World	Institutions	Size	Visibility	Rich Files	Scholars
1	143	Indian Institute of Science Bangalore ePrints	946	1330	970	377
2	232	Indian Statistical Institute Digital Library	1407	1100	1277	1275
3	252	National Institute of Oceanography India Digital Repository	325	185	462	575
4	329	National Aerospace Laboratories Institutional Repository	1120	976	867	1061
5	369	ePrints Central Marine Fisheries Research Institute	641	1182	418	757
6	384	Open Access Repository Publications of Fellows of the Indian Academy of Sciences	1287	988	1052	1179
7	398	Indian Institute of Science Bangalore Electronic Theses and Dissertations	93	1436	1277	1275

8	458	National Institute of Technology Rourkela Digital Archive	1230	447	841	773
9	485	Thapar University Digital Repository	234	1035	456	1070
10	536	Indian Institute of Astrophysics DSpace	382	459	540	1031
11	591	Indian Institute of Management Kozhikode DSpace	1188	640	520	391
12	607	Indian Institute of Technology Bombay Digital Repository	1212	583	585	1257
13	625	Raman Research Institute Digital Repository	1224	1230	1082	1257
14	679	Open Access Repository National Metallurgical Laboratory	991	310	425	453
15	681	Dyuthi Digital Repository Cochin University of Science and Technology.	404	37	834	936
16	707	Information and Library Network Centre Institutional Repository	604	1224	830	883
17	791	National Science Digital Library, CSIR	803	874	496	661

18	891	Bhagirathi IIT Roorkee Repository	919	927	642	549
19	896	International Crops Research Institute for the Semi-Arid Tropics Open IR	271	496	473	916
20	945	North-Eastern Hill University Digital Library	838	501	610	523
21	1007	ePrints Central Food Technological Research Institute	1402	1081	1277	1158
22	1026	Digital Knowledge Repository of Central Drug Research Institute Lucknow	956	1373	1127	905
23	1039	Knowledge Repository Open Network KNOOR University of Kashmir	868	512	792	1096
24	1067	Indian Institute of Technology Delhi ePrints	870	573	211	328
25	1166	Kautilya @Indira Gandhi Institute of Development Research	968	982	482	456
26	1207	Digital Repository of National Centre for Radio Astrophysics	274	826	98	242
27	1241	Knowledge Repository of Indian Institute of Horticultural Research	940	1086	893	689

28	1257	Vidyanidhi Digital Library University of Mysore	544	92	310	476
29	1326	ePrints Indian Agricultural Research Institute	322	537	807	372
30	1328	ePrints School of Biotechnology Madurai Kamaraj University	1423	222	1277	1275
31	1392	Mahatma Gandhi University Online Theses	514	697	560	774
32	1433	Yuj Research Gateway Cochin University of Science and Technology.	835	1143	897	1231

(Ranking Web of World Digital Repositories, 2013)

Table-5

Subject wise distribution	Collection	Percentage
Social Sciences	375125	18%
Library & Information Science	115159	5%
Health & Medical Sciences	224125	11%
Science and Technology	475158	23%
Multidisciplinary	875128	43%

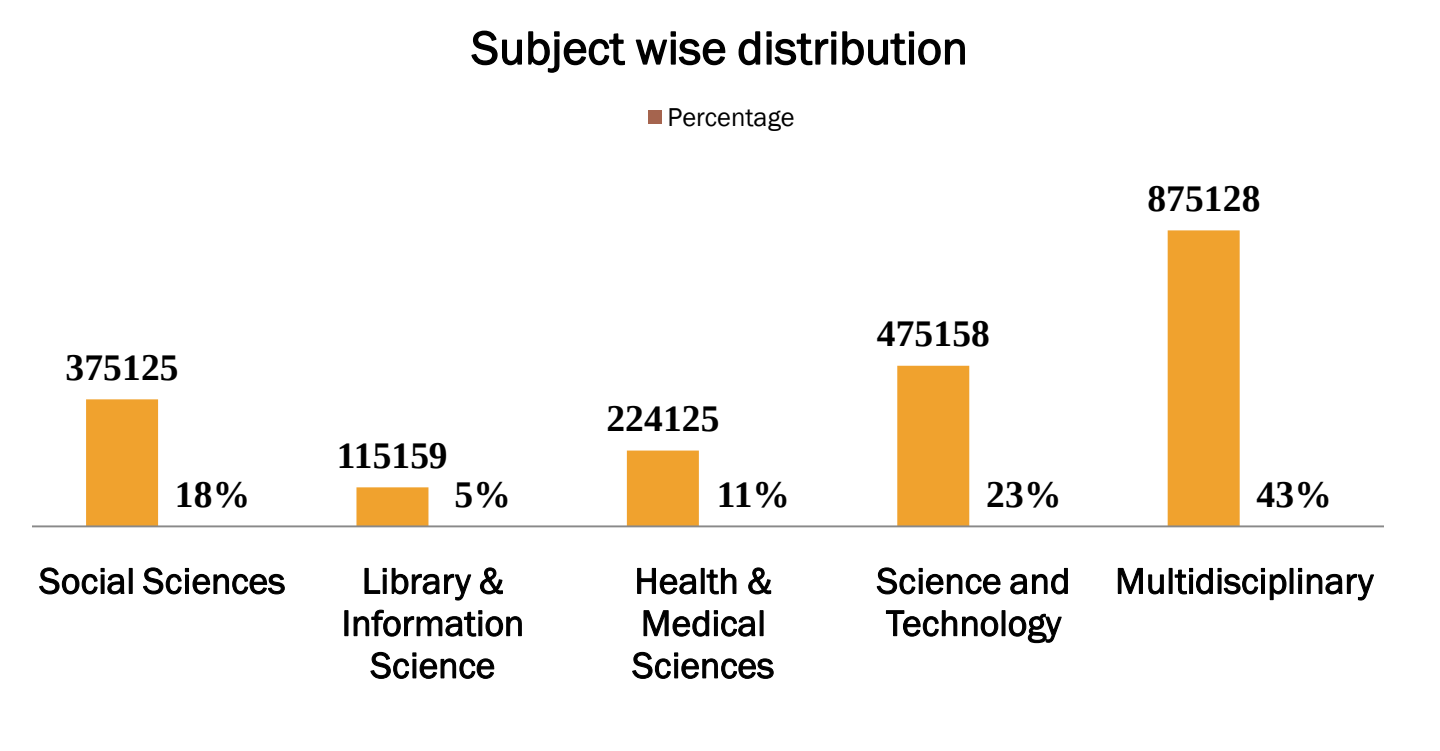

Figure-2

SUBJECT WISE DISTRIBUTION OF IRs

The table-5 shows that the total collection and their percentage as different subjects such as social sciences, health & medical sciences, science and technology, multidisciplinary and library and information science. Here library and information science has been treated as whole subject to see its total collection in IR in India.

CONCLUSION

Distance education is a vehicle to provide quality and specialized education to students that for several reasons cannot attend regular classroom courses. The role played by digital libraries is an important one to ensure distance learners have the same kind of resources at their disposal. Libraries are making good efforts to ensure that quality collections and services are provide to students in remote location. Nevertheless, these services are also heavily used by staff and students on campus.

University Grants Commission (UGC) also realizing the importance of hosting research activity of the institute, they have forced the institutions to create and develop their own Digital repository.

Similarly Govt. agencies like ICMR, IITs, IIMS, CSIR, DBT & ICAR etc. must make it compulsory for the institute to create Digital repository. For countries in developing areas – where the concerns about cost might be very crucial – it is important to realize that large digital library initiatives are collaborative efforts. The digital repositories also serve as a comprehensive publications database of the parent organization, which in turn facilitate better management of research knowledge, better visibility and wider access, better impact and citations, rapid communication of research, long-term preservation.

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