Proceedings of the Conference on University Librarianship

27 - 28 May 2005

Organized by

...ersity Librarians Association of Sri Lanka

Colombo

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SCOLIS – ULA Conference on University Librarianship

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SRI LANKA
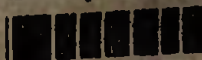
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RESOURCE PERSONS

Dr. T.A.V. Murthy

Dr. T.A.V. Murthy is currently the Director of INFLIBNET and President of SIS. He holds B Sc, M L I Sc, M S L S (USA) and Ph.D. He carries with him a rich experience and expertise of having worked in managerial level at a number of libraries in many prestigious institutions in India including National Library, Indira Gandhi National Centre for Arts (IGNCA), Indian Agricultural Research Institute (IARI), University of Hyderabad, Administrative Staff College of India (ASCI), Central Institute of English and Foreign Languages (CIEFL) etc and Catholic Univ and Casewestern Reserve Univ in USA. His highly noticeable contributions include KALANIDHI at IGNCA, Digital Laboratory at CIEFL etc. He has been associated with number of universities in the country and has guided number of Ph.Ds and actively associated with the national and international professional associations, expert committees and has published good number of research papers. He can be approached at tav@inflibnet.ac.in

Prof. Rajiva Wijesinha

Prof. Rajiva Wijesinha is the Dean, Social Sciences and Languages in the University of Sabaragamuwa of Sri Lanka and hold BA in Literature Humanities 1975, MA 1978. E K Chambers Studentship, (Corpus Christi College, Oxford), 1975 ˜ 78. BPhil (Oxon) in English Studies, 1977. DPhil in English Literature 1979.

He is at present the Professor of Languages, Sabaragamuwa University, Academic Coordinator Sri Lanka Military Academy Degree Programme, Consultant English Development Unit Ministry of Education and Chairman Academic Affairs Board National Institute of Education. His current activities include the Editorial Board Journal of Commonwealth Literature, Member National Education Commission and Member Board of Management of the Bandaranaike Centre for International Studies. Prof. Wijesinha, a prolific writer has produced publications in English language and literature, politics, history and creative writing. Prior to his current post at the Sabaragamuwa University he held posts at the British Council, University of Sri Jayewardenepura and Ministry of Education.

Mr. Prem Chand

Mr. Prem Chand is a Scientist and a group leader of Database Development and Management Group (DDMG) at INFLIBNET Centre. He holds Master degrees in Political Science and in Library and Information Science and currently pursuing his PhD studies. He has developed union catalogue of books, serials and theses of 142 academic libraries in India and successfully coordinated the development of web interface for searching of these databases. He is involved in development of Union catalogue academic libraries in India. At present he is shouldering the responsibility of UGC- INFONET E-journal consortium which consist of 150 university libraries in India. His areas of interest are Bibliographic standards and format, Library Automation, Networking, Library Consortia, Digital Library, Open Archives, ILL and Database Management

Dr. Harish Chandra

Dr.Harish Chandra is the Librarian of Indian Institute of Technology Madras (IIT Madras) since January 1995. Prior to this, he has also worked in IIT Delhi, Geological Survey of India, Western Region (Jaipur) and Indian Institute of Foreign Trade, New Delhi. He has M.A. Economics, Public Administration, M.L.I.Sc, Ph.D, Library Automation Training from University of Cambridge, UK and Digital Library from Tilburg University, The Netherlands. His major contribution areas are, rural information system, forestry library and information system, creating patents information support services, ISO-9001 application in the Central Library of IIT Madras, digital library initiatives, implementation of total bar-coding, establishment of automatic bindery, creating CD-Publishing and networking facilities, website creation, new library building planning, shifting, implementing VTLS-VIRTUA international library management software, smart card application, funds raising through projects. He has been a member of the Task Force for higher education library system, Department of Education, Ministry of Human Resources Development, Government of India.

He has received several national and international honors and awards including Best Technology Librarian Award 2004 and International Travel Grant for attending 25th Conference of International Association of Technological University Libraries. More details about him are posted on his personal website http://www.harishchandra.net

Prof. Narada Warnasuriya

Prof. Narada Warnasuriya is presently the Professor of Paediatrics and Dean of the Faculty of Medical Sciences in the University of Sri Jayewardenepura. He is a senior academic with a wealth of experience in Sri Lanka and abroad having worked as a Consultant Paediatrician and Postgraduate Tutor in the UK and Saudi Arabia. He is a past president of Sri Lanka College of Paediatricians and the Nutrition Society of Sri Lanka.

He commenced his academic career in the University of Colombo in 1973. He had his post graduate training in the Dept. of Child Health University of Newcastle upon Tyne UK. He is a Fellow of the Royal College of Physicians of London, the Ceylon College of Physicians, the Sri Lanka College of Paediatricians and an honorary Fellow the Ceylon College of General Practitioners.

He has been actively involved in quality enhancement activities within the university system. He is at present a member of the Standing Committee on Quality Assurance and Accreditation of the UGC. Chairman of the Subject Benchmarking group for Medicine, Senior Trainer, for the Quality Assurance program of the CVCD and a National Reviewer for IRQUE / QEF project. He is also member of the Board of Management of Postgraduate Institute of Medicine (PGIM) and the Academic Board of the National Institute of Education (NIE). Having been the Chairman of the Library Committee of Faculty of Medical Sciences, University of Sri Jayewardenepura for nearly five years he has had a keen interest in the development of university library services.

Prof. Warnasuriya s research interest has been in the field of Nutrition and Growth. He has authored many research papers and served on several National and International expert committee in this field.

Ms Pippa Smart

Ms. Pippa Smart is the Head, Publishing Initiatives of the International Network for the Availability of Scientific Publications (INASP). After a degree in publishing, she has worked within the academic publishing in both the commercial and non-commercial sectors. After initially working as a production manager, during which time she managed the introduction of e-publishing into the traditional publishing business, she has played various roles to support journals to launch and develop successful business models. She was with CAB International. Blackwell Publishing and Cambridge University Press before moving out of mainstream publishing to work with academic and scholarly publishers in the developing world with the International Network for the Availability of Scientific Publications (INASP). In her current role she supports editors and publishers of academic and scholarly publications (in particular journals) to make their publications more sustainable, more visible, and to give a presence to research publications from the developing and transitional countries. In addition to supporting training and professional education, she also undertakes consultancies, develops e-solutions for the publishers and editors, and assists in the development of publishing and editorial networks.

Reaching for the Stars

There was only one university with 4 faculties in 1948. Today there are 14 universities and campuses in all provinces. Libraries are established practically in all and they have become an integral part in contributing to higher learning, advanced research and national development.

It is said that the first library started in 1942 even before the first university came into being. The University Librarians Association (ULA) representing the professional librarians celebrated its 23rd anniversary in June and in October 2004 took the bold decision to hold its first ever International Conference on the theme E information for teaching, learning and research : options for a University Consortiaf.

The decision to hold a Conference was influenced by the following :

- Setting up a University Consortium to access e-journals.

- Initiatives taken by the Sida / SAREC Library Support Project.

- Emergency of e-products and their wide spread availability.

- Enthusiasm to introduce and develop e-information to assist the teaching, learning and research process.

- The recent World Bank Project (IRQUE) with emphasis on Quality and relevance on higher education.

During the Conference we are fortunate to have professional experts in the fields of networking, e-products, e-technology, publishing and higher education as Resource Persons bringing a wide range of views and ready to present the following papers:

Dr. T A V Murthy (Director/INFLIBNET Ahmedabad,India) - *"UGC - Infonet - e - journal consortium for universities and colleges: an Indian experience".*

Mr. David S. Shawah (Product Manager / iGroup.Thailand) *"How to establish and benefit from Informal Consortia".*

Prof. Rajiva Wijesinha (Head, Dept. of Languages / Sabaragamuwa University) *"Priorities and challenges for Sri Lanka University Librarianship"*

Mr. Prem Chand (Scientist/INFLIBNET) *"Role of INFLIBNET in establishing accessibility of e – journals consortium in academic libraries in India"*

Dr. Harish Chandra (Librarian/Indian Institute of Technology, Chennai, India) *"Creating e-information environment for academic excellence through implementing INDEST consortia: a case study of the central library of Indian Institute of Technology, Madras"*

Prof. Narada Warnasuriya (Dean, Faculty of Medical Sciences/University of Sri Jayawardenepura) *"The quality of University libraries: a Sri Lankan perspective "*

Ms. Pippa Smart (Head Publishing Initiatives INASAP/UK) *" E- access to local information: institutional and journal repositories"*

On behalf of ULA I record my deep appreciation to Prof. L.L. Ratnayake former Chairperson of the Standing Committee on Libraries and Information Sciences (SCOLIS) for his advice, assistance and co-operation to make this Conference a reality.

I also thank the members of the ULA Executive Committee who tirelessly worked towards achieving the dream*f* set in October 2004. Our local and international Sponsors assisted us to achieve that dream.

My dream is that ULA would continue the Conference series and assist University Librarianship to reach the stars !

Harrison Perera
President / ULA

UGC- INFONET e-journal consortium for universities and colleges: an Indian experience

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Abstract

Electronic journal packages, have become standard resources in academic libraries in the last few years The development in Information Technology (IT) has facilitated the formation of different types of library consortia to share the cost of information resources. Library consortia are a concept of 1960s though the e-consortia are features of the present century. The increasing global collaboration of people and shared resources needs to be developed and concerted efforts by the LIS professional to solve the emerging problems. In this electronic Information age Library Consortia is gaining more importance. This paper will highlight about UGC-INFONET. The central theme of the paper will deal on the use of E-journals by the Academic and research community in India.

Keywords: INFLIBNET, UGC-Infonet, E-Journal, Consortia

1. Introduction

The implications for academic libraries are enormous. The consortia offer the opportunity of providing access to a broader and deeper range of titles than most libraries currently can provide their communities. This is particularly true concerning consortium-purchased bundles. The institutions gain electronic access to all titles in their subscriptions, in the consortia partners. For librarians and their institutions' faculty and administrators, such an expanded collection is of obvious benefit. The Information and Library Network (INFLIBNET) Centre had already started the subscription of e-journal under consortium model for the Indian universities which will further extend to Colleges. Now it has set out to be a major player in promoting scholarly communication among academicians and researchers in India by

- Forming a consortium among the universities
- Promoting library network
- Subscribing e-journal
- E-resource development
- Archival maintenance
- Website, training, etc.

Indian universities constitute one of the largest higher education systems in the world. With 310 Universities/institutions, 16,000 affiliated colleges, around 10 million students and 05 lakh teachers. It is a great challenge to ensure effective coordination and communication. Fast changing curricula and frequently introducing of new subjects impose a great demand on the system in general. Indian universities need to be given the required thrust to enter the third millennium with a leading edge.

2. UGC-INFONET

Technology is a driving force in the contemporary education systems and the road of achieving success in the field of knowledge is a long way So, University Grants Commission (UGC) and Education and Research Network (ERNET) India have set out on the journey of accomplishing the mission to provide relevant and quality education with enhanced access and equity through UGC- INFONET Programme. UGC Infonet is an ambitious programme of UGC to interlink all the Universities in the country with state-of-art technology. It was formally inaugurated by the Honorable Prime Minister on 28th December, 2002. The UGC-INFONET have overlay on ERNET infrastructure to provide assured quality of service and optimal utilization of bandwidth resources. The project is being funded by the UGC with 90% capital investment and 100% recurring cost during the 10th Five year Plan period. A Joint Technical and Tariff Committee (JTTC), consisting of leading experts in the country have been set up to guide and monitor the entire project. INFLIBNET Centre is the nodal agency for coordination of the UGC-INFONET and facilitates linkage between ERNET and the universities. UGC-INFONET has become a boon to the higher education system in several ways. And in the long run, each University will become a hub for the colleges affiliated them.

- ➢ It becomes a vehicle for distance learning.
- ➢ It is a tool for distribution of education material and journals to remotest of areas.
- ➢ It is a resource for researchers and scholars for tapping most up-to-date information.
- ➢ It forms a medium for collaboration among teachers and students, not only within the country but also all over the world.
- ➢ It is on Intranet for university automation.
- ➢ It establishes a channel for globalization of education.

UGC-INFONET establishes a seamless link between the UGC and the universities. This helps to provide more accurate and up-to-date picture of the Universities, while at the same time it enables universities to have timely information about various schemes of the UGC. Consequently, this brings a qualitative change in the UGC-Universities interaction. The huge and multifaceted Indian Education Systems has achieved greatest efficiency through e-governance of UGC.

2.1 The main features of the UGC-INFONET are

- ➢ Scaleable Architecture to grow from Universities to affiliated Colleges

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- Nation-wide Terrestrial Backbone using Fiber Optic links
- Integrated Satellite WAN supporting broadband and SCPC -VSAT technology
- Comprehensive Network Management Systems for overall monitoring of the network, down to each and every device
- Linkage with other Academic and Research Networks all over the world
- Data security and virus protection using firewalls and Intrusion Detection Systems
- Dedicated Data Center for Web hosting, e-Journals and mail boxes;
- Mirror sites spread all over the country for content hosting and
- Broadband multimedia and video channels for distance learning.

2.2 UGC- INFONET Training

Training of manpower is one of the most critical resources for successful implementation of high-tech programmes like UGC-INFONET. ERNET India has setup a modern training laboratory to train network system managers and users of UGC-INFONET. Technical staff from each of the participating universities is trained to take maximum advantage of the infrastructure. More than 140 Computer and Library professionals from 129 Universities have been trained at ERNET India, New Delhi. Above 96 Library professionals from 63 universities have been trained for e-resources management at INFLIBNET Centre, Ahmedabad.

3. E-Journal Consortia

With globalization of education and competitive research the demand for the journals has increased over the years. Due to insufficient funds, libraries have been forced to cut on subscriptions of journals which is a great loss to the Academic community. The UGC has turned towards the Internet to cover the gap between the demand and supply by way of e-journals that can be subscribed online. Most of the journals are available in electronic form. UGC explored the possibilities of alliances with the publishers for adapting a consortia-based approach for e-subscription of journals. And these journals will be available over UGC-INFONET to all the universities. New research publications are available on the net as free ware, there by making quality information available to a wider academic scholar base spread across the country at an affordable price. Realizing the needs of the academic community the UGC-INFONET E-Journal consortia has started. On 28th December 2003 his excellency the President of India at Vigyan Bhawan has dedicated a bouquet of e-journal to the nation for the academic community.

From 2004 onward under the UGC-INFONET E-Journal consortia the INFLIBNET centre has started its subscription to e- journal for the Indian Universities to enhance the researcher to update their knowledge with the latest information. In the 1st phase 50 universities were selected out of 310 Indian Universities. From 2005 it extended to 50 more Universities. Now the subscription is accessible to 100 Indian Universities. Altogether there were more than 4000 e-journal which are accessible to Universities from 21 different publishers and this year we are proposing another 4 more

publishers. From the users point of view we get a good feed back that this programme should be continued and also include other subjects which were not there at present. Archival access is also available for most of the journal from 1997 onward. Some of them are available from Vol. No 1 Issue No.1 also. The subjects covered almost all areas, like Arts, Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Sciences, Mathematics and Statistics. The number of E-journal and name of the Publisher along with their coverage is listed below

Journals subscribed under UGC-Infonet E-journal Consortium.

Name of the Publisher	No. of Journals/Database	Coverage/ Back files
1. American Chemical Society(1876)	31 Journals	Vol. 1 Issue 1
2. American Institute of Physics American Physical Society	27 Journals	1997- Archival files vary from journal to journal.
3. Annual Reviews	29 Journals	Archival access for the last ten years
4. Biological Abstract	One Database	1969-
5. Blackwell		
6. Cambridge University Press	188 Journals	1997-
7. Chemical Abstracts Services (Sci-finder Scholar)& STN	One Database	1907-
8. Elsevier Science	34 Journals	Archival access from 1995
9. Emerald	28 Journals	2001- varies from Journal to Journal
10. Encyclopedia Britannica	National site Licensing	
11. Gateway Portals Ingenta and J-Gate	Cover more than 10,000 Journals up to abstract level	
12. Institute of Physics	36 Journals	Vol. 1 Issue 1
13. J-Store	457 Journals	Vol. 1 Issue 1
14. MathSciNet	One database	1940 to current
15. Nature	1 Journals	1997-
16. Portland Press	4 Journals	1996 to current
17. Project Muse	222 Journals	1999-
18. Royal Society of Chemistry	23 Journals + 6 database	1997-
19. Science Online	1 Journals	1996 -
20. Springer & Kluwer	1217 Journals	1997-
21. Taylor & Francis	1105 Journals	1998-

Proposed Journals for the Year 2005

Name of the Publisher
1. Euclid
2. John Wiley
3. Oxford University press
4. Scopus

The present world of Information explosion and proliferation of published literature throughout the world have dramatically changed in higher education. The challenges posed by information explosion get multiplied due to resource crunch on one hand and increasing cost of publication on the other. But the consortia have helped out to face these challenges. The advent of information technology and networking technologies have changed the concept and have opened new vista of library consortia not only faster and cheaper but also opened a flood gate of resources available in different parts of the world. The literature made available includes journals covering research articles, reviews and abstracting databases. Access is provided to current as well as archival literature. Portals are also provided which will enable the users to navigate easily through all the literature.

3.1. Subject coverage

The UGC-INFONET E-journal consortium covers almost all areas of learning. It further aims at covering all fields relevance to various Universities including, Arts & Humanities, Social Sciences, Physical and Chemical Sciences, Life Sciences, Computer Science, Mathematics, Statistics etc. The major subjects covered so far in the consortium are given in table as well as in graph below:

Percentage of Subject Areas covered under UGC-INFONET as on March, 2005

Subject Covered (in % on March 2005)

☐Humanities 6%

☐Sciences
■Social Sciences
☐Humanities

☐Sciences 48%

■ Social Sciences 46%

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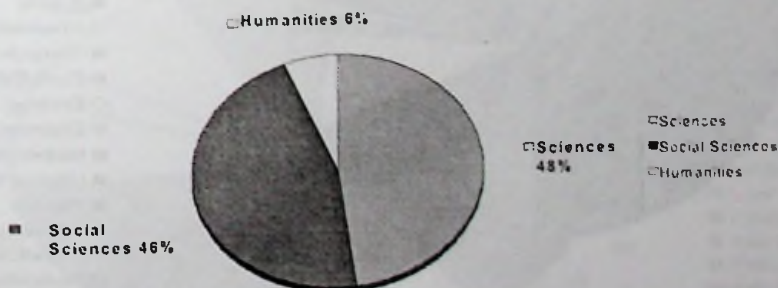
Table 1. Subject coverage Science Journals

Sl. No.	Science subjects	No. of Journals
1	Agriculture	39
2	Anthropology	45
3	Astronomy	17
4	Biochemistry	1
5	Biology	306
6	Biotechnology	15
7	Botany	39
8	Chemistry	167
9	Computer Science	133
10	Earth Science	64
11	Ecology	7
12	Engineering	158
13	Mathematics	192
14	Medical Science	494
15	Physics	178
16	Sciences	56
17	Statistics	36
18	Technology	17
19	Zoology	16
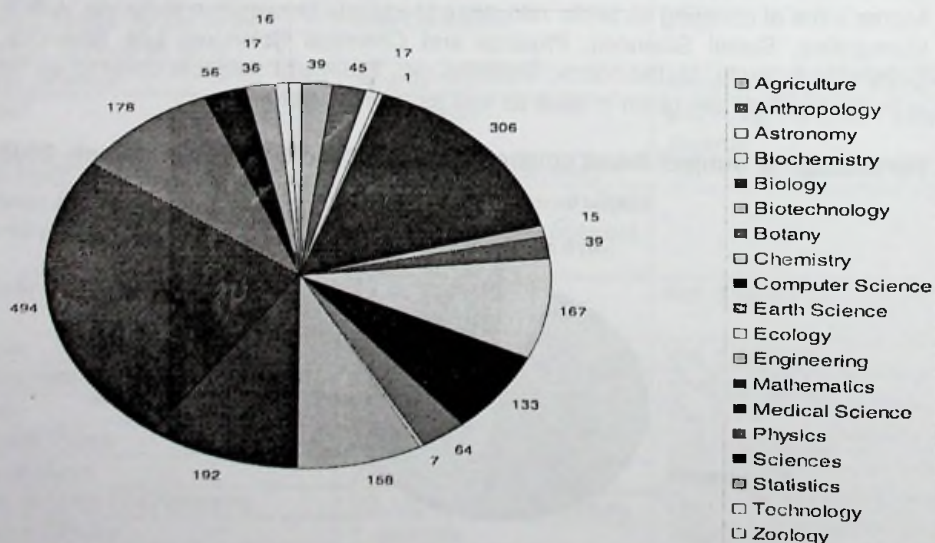
Fig. 1 Science Subjects

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Table 2. Subject coverage Social Science Journals

Sl. No.	Social Science subjects	No. of Journals
1	Archeology	17
2	Architecture	9
3	Arts	184
4	Business	43
5	Commerce	3
6	Culture	21
7	Economics	188
8	Education	159
9	Environmental Studies	93
10	Geography	45
11	History	221
12	Information Science	19
13	Law	61
14	Library Science	36
15	Management	16
16	Philosophy	124
17	Political Science	153
18	Psychology	147
19	Religion	55
20	Social Science	166
21	Sociology	155
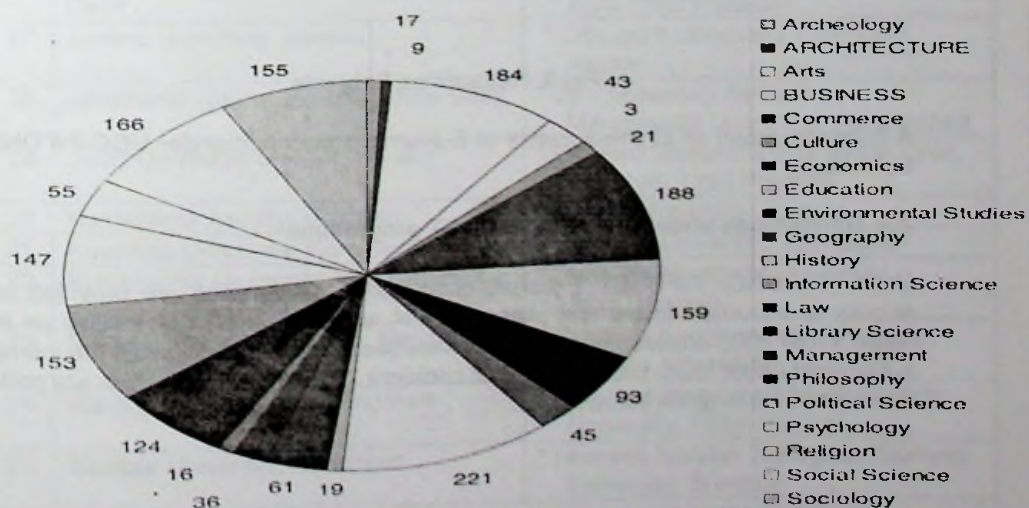
Fig.2 Social Science Subjects

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Table 3. Subject coverage Humanities Journals

Sl. No.	Humanities subjects	No. of Journals
1	Humanities	26
2	Language & Linguistics	79
3	Literature	159
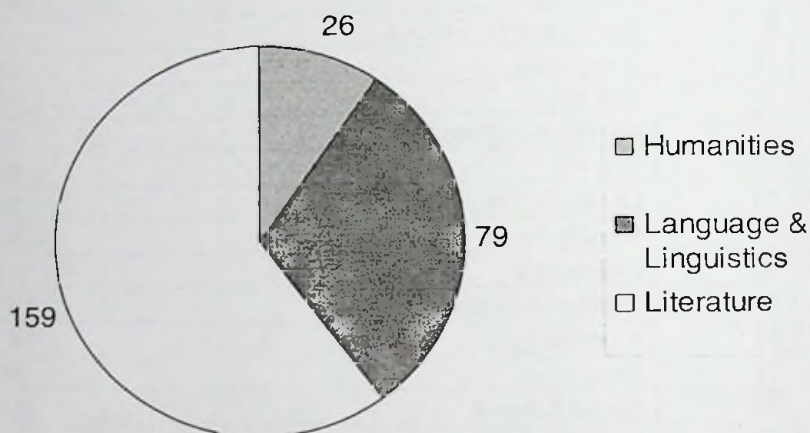
Fig 3. Humanities Subjects

A combine graph of all the subjects of E-Journal subscribed under UGC-INFONET consortium

2.2. Universities under the UGC-INFONET programme

Under the UGC- INFONET E-journal consortia 50 Universities are provided free access to e-journals in the first phase in 2004 and another 50 Universities on trail basis. From 2005 onwards all the 100 Universities are able to access all the journals subscribed under UGC-Infonet E-journal consortia. The Universities which are part of the consortium is given below.

Sl. No.	First 50 Universities	Second 56 Universities
1.	Aligarh Muslim University, Aligarh	* Amravati University, Amravati
2.	Andhra University Waltair, Visakhapatnam	* Arunachal Pradesh University, Arunachal Pradesh
3.	Anna University, Chennai	* Annamalai University, Tamil Nadu
4.	Avinashilingam Institute for Home Science & Higher Education for Women, Coimbatore	* Assam University, Silchar Assam
5.	Banaras Hindu University, Varanasi	* Awadhesh Pratap Singh Univ, Rewa Madhya Pradesh
6.	Bangalore University, Bangalore	* Babasaheb B.A.Bihar Univ., Muzaffarpur, Bihar
7.	Birla Institute of Technology & Science, Rajasthan	* Banasthali Vidyapith, Rajasthan
8.	Calcutta University, West Bengal	* Berhampur University, Orissa
9.	Cochin University of Science & Technology Cochin, Kerala	* Bharathiar University, Tamil Nadu
10.	Devi Ahilya University, Indore	* Bhavnagar University, Gujarat
11.	Gauhati University, Assam	* Birla Institute of Technology, Ranchi
12.	Goa University, Goa	* Bundelkhand University, Jhansi UP
13.	Guru Nanak Dev University, Amritsar	* Chaudhary Charan Singh University Meerut, UP
14.	Jadavpur University, Kolkata	* Chhatrapati Shahu Ji Maharaj Kanpur University, Uttar Pradesh
15.	Jamia Hamdard University, New Delhi	* Chhatrapati Shahu Ji Maharaj Kanpur University, Kanpur UP
16.	Jamia Millia Islamia University, New Delhi	* Dayalbaugh Educational Institute Agra, Uttar Pradesh
17.	Jammu University, Jammu	* Dibrugarh University, Dibrugarh Assam
18.	Jawaharlal Nehru University, New Delhi	* Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
19.	Jiwaji University Gwalior, Gwalior	* Dr. Ram Manohar Lohia Avadh Univ. Faizabad, Uttar Pradesh
20.	Karnatak University, Dharwad	* Gujarat University, Gujarat
21.	Kuvempu University, Karnataka	* Gulbarga University, Karnataka
22.	Kurukshetra University, Kurukshetra	* Guru Jambheshwar University Hisar, Haryana
23.	Madurai Kamraj Univeristy, Madurai	* Gurukula Kangri vishwavidyalaya Hardwar, Uttranchal
24.	Mangalore University, Mangalore	* Hemchandraacharya North Gujarat University, Patan Gujarat
25.	Manipur University, Canchipur	* Hemwati Nandan Bahuguna Garhwal University, Srinagar
26.	Mahatma Gandhi University, Kottayam Kerala	* Himachal Pradesh University Shimla, Himachal Pradesh

27.	Nagpur University, Maharashtra	* Indraprastha University, Delhi
28.	North Eastern Hill University, Shillong	* Jawaharlal Nehru Technological Univ., Hyderabad AP
29.	Osmania University, Hyderabad	* KakatiyaUniversity,Vidyaranyapuri Warangal AP
30.	Pondichery University, Pondichery	* Kalyani University, Kalyani WB
31.	Pt. Ravishankar Shukla University, Raipur	* Kumaun University, Nainital Uttranchal
32.	Punjab University, Punjab	* Maharshi Dayanand Saraswati University Rohtak, Haryana
33.	Punjabi University, Patiala	* Manonmaniam Sundaranar University, Tirunelveli Tamil Nadu
34.	Sardar Patel University, Gujarat	* Mohanlal Sukhadia University Udaipur, Rajasthan
35.	Shivaji University, Vidyanagar Kolhapur	* Nagaland University, Kohima Nagaland
36.	Tezpur University, Tezpur	*NagarjunaUniversity,Nagarjunanagar
37.	Thapar Institute of Engineering and Technology, Patiala, Punjab	* North Maharastra Univ.Jalgaon Maharashtra
38.	The Maharaja Sayajirao University of Baroda, Vadodara	* Rani Durgavati Vishwavidyalaya, Jabalpur, Madhya Pradesh
39.	University of Allahabad, U P	* Sambalpur University, Orissa
40.	University of Calicut, Kerala	* Saurashtra Univ., Rajkot Gujarat
41.	University of Delhi, Delhi,	* South Gujarat University, Surat
42.	University of Hyderabad, Andhra Pradesh	* Sri Sathya Sai Institute of Higher Learning, Anantapur A. P.
43.	University of Kashmir, Srinagar	* Sri VenkateswaraUniversity,Tirupati
44.	University of Kerala, Thiruvanathapuram	* Tilak Manjhi Bhagalpur University Bihar
45.	University of Madras, Tamil Nadu	* Tripura University, Agartala
46.	University of Mumbai, Maharashtra	* University of Burdwan, West Bengal
47.	University of Mysore, Karnataka	* University of Lucknow,Uttar Pradesh
48.	University of North Bengal, Darjeeling	* Utkal University, Bhubneshwar Orissa
49.	University of Pune, Maharashtra	* Vidyasagar University Rangamati West Bengal
50.	University of Rajasthan, Jaipur	* Vishvabharati Shantiniketan, West Bengal
51.	* The Nuclear Science Centre	* Inter University Centre for Astonomy & Astro Physics
52.	* UGC-DAE Consortium for Scientific Research	* Gokhale Institute of Politics & Economics
53.	* Mahatma Gandhi Chitrakoot Gramoday Vishwavidalaya	* Barkatullah University Bhopal M.P

* Universities in the Second phase.

2.3. Training programme conducted:

For accessing these e-resources INFLIBNET had conducted many awareness programs in different Universities. So far one awareness programme in the use of e-resources has been conducted in 36 Universities across the country. Two days National Seminar is also conducted in five different places - Varodara, Bangalore, Goa, Delhi and Kolkata.

2.4. Usage Statistics:

The tables summarize the available information regarding usage statistics of electronic content services provided to the Universities as part of the UGC-Infonet E-journal consortium and the access to information by the participating libraries from the different publishers during January ˉDecember 2004. The information was provided voluntarily by the publisher as listed in the tables to aid understanding of usage statistics.

No. of Downloads for different publications

Name of the Publisher	2004-Jan	2004-Feb	2004-Mar	2004-Apr	2004-May	2004-Jun	2004-Jul	2004-Aug	2004-Sep	2004-Oct	2004-Nov	2004-Dec
IOP	3290	4838	3971	4905	3138	2993	3809	4150	4634	3710		
ACS	15617	20985	26611	24647	24487	24696						
AR			1519	2935	3299	2631	4108	4108	3910	3302	119	
BA	9815	42107	11248	12156	54839	15244	32294	19609	27119	57721		
CUP	153	158	421	998	489	811	312	909				
Elsevier				42077	81942	13613	14075	14724	13963			
IOP-Archive	2231	1438	524	961	751	855	798	991	932	920		
Kluwer	0	0	0	4597	5579	5572	8509	5798	5868	6603	7189	9537
Springer	255	163	605	2304	4037	3652	4963	4894	5173	5313	5129	

Fig 4. Usage Statistic of the Universities from different publisher.

Source: From Publisher site
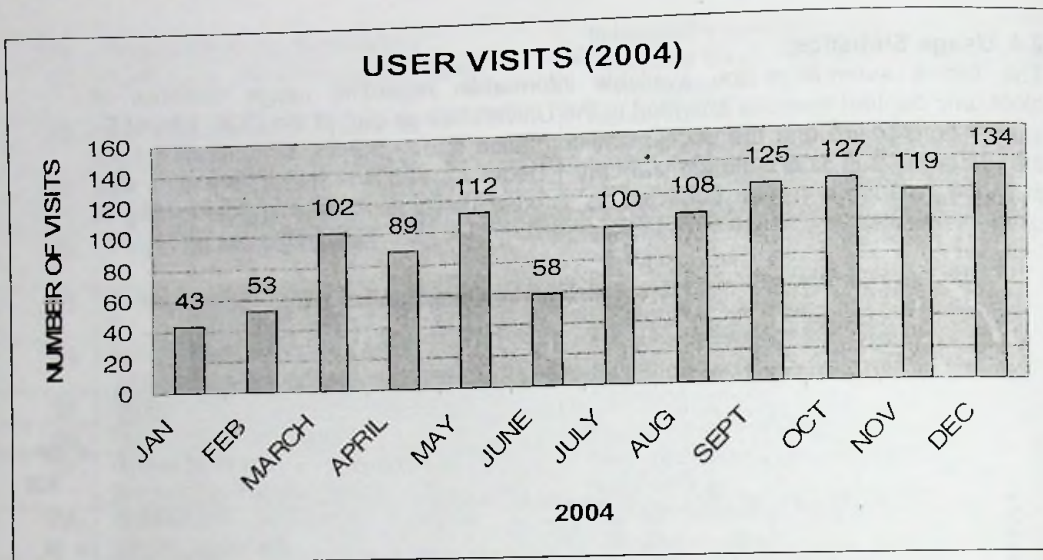
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USER VISITS (2004)

Fig: 5 User visits in INFLIBNET Centre during January-December 2004.

Source: Visitor Register.

2.6. Prospects for University and College libraries:

Consortia allow Institutions to exchange program ideas, best practices, and curricula, and identify solutions to challenges that individual Institution may be facing. It also facilitates joint programming among and makes them possible for centers to share resources associated with programming. For example, a group of Institutions could pursue large funding that otherwise would not be available to individual centers. Consortia-based subscription to electronic resources provides access to wider number of electronic titles at substantially lower cost. Apart from these consortia brings about:

- ❖ Increase the cost benefit per subscription
- ❖ Ensure continuous subscription to periodicals subscribed.
- ❖ Provides access to wider number of electronic resources at substantially lower cost;
- ❖ Collective purchase option attracts highly discounted rates
- ❖ The rates offered to the consortium are lower by 50% to 90% depending upon databases and full text journals.
- ❖ Research productivity is expected to improve
- ❖ Expected to bring remarkable change in sharing of both print and electronic resources amongst university libraries.
- ❖ Provides archival access to the collection and also backup facility for print copies of the subscription

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❖ Libraries participating in consortia will benefit of accessing more literature without actually worrying about space and other related problems.

3. CONCLUSION

A small beginning under a bigger umbrella has been made in right earnestness. INFLIBNET is probably the most ambitious venture of its type in India, involving massive content gathering, organizing and management. It is also a well-thought-out e-journal service with great potential to scholars and libraries in the country. It is believed and hoped that INFLIBNET will leverage on the initiative to come out with related services of great use and importance. These could include: personalized information delivery, integration with other high-quality open access to scholarly content available on the Web, low-cost subject-specific bibliographic collections, third-party archiving solution, and aggregation and hosting of Indian e-journals. Consideration also needs to be given for adopting relevant best practices and standards for information organization and delivery. Some of the technical challenges include maintenance of link currencies, development of automatic approaches to intelligent information organization and searching, and provision of reliable service within reasonable response and turn-around times. Most importantly INFLIBNET has to be constantly in touch with the needs of the targeted user community and respond to these in a proactive manner. With time, via Infonet, education in Indian universities will shine at the global level as solar energy shines everyday, which indicates that no one should be deprived of education because of location or time inconvenience.

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Responding to the challenges of e-learning

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Chairman, Academic Affairs Board
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I should begin by apologizing, in a conference devoted to electronic learning, about the very unsophisticated nature of my offering. I see from the contents of the Conference Holder that everyone else delivering a paper has prepared a Power Point Presentation, the text of which has been made available already. Not being very competent in this field, I am able only to speak ¯ a task made even more complicated by my having to do this in the first session after lunch, which is when the temptation to sleep is greatest.

I thought it best therefore to be discursive and anecdotal, to try to entertain you to hold your attention. In the course of this I hope I will be able to make a couple of points that I think particularly important in the current context if we are to maximize usage of the vast resources that are now at your disposal.

So let me start with a couple of anecdotes that indicate the level of the challenges with which you as Librarians, and we as Academics engaged in teaching, have to deal. Some years back, talking to a graduate who had done English as a subject, I inquired about the capacity of his students to understand the set of textbooks prescribed for Secondary School English. He taught in a small school in Dehiattakandiya, so I was quite impressed when he told me that comprehension was quite easy up to the Grade 9 book, but there were some difficulties with 10 and 11. When I conveyed my admiration, he clarified the position. He had been talking about his own capabilities, not those of his students.

The second anecdote is much simpler, but deals with the same set of texts. When I asked some students, at university, whether they could read a passage from one of those texts, the answer was that they could read, but they could not understand.

Unfortunately, that distinction does not seem to have made any impression on many of those engaged in our profession. We now have fairly large budgets for university libraries, and we feel obliged to use them up, as part of that strange phenomenon in government spending where using up allocations becomes an end in itself, regardless of the outcome of that spending. So we find ever more sophisticated books being bought, which the vast majority of our students cannot read.

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As I have seen at our university, as many of you have confirmed to me from your own experience, libraries at universities are used to a great extent now by students to read their lecture notes, not the books that cram the shelves. One of you indeed told me that there are lecturers who insist that sets of their lecture notes should be kept available in the library for students to read ˇ the idea that they might refer to original sources, or alternative viewpoints, is no longer considered essential for academic progress. And the result, as we are all too sadly finding, is that each generation knows less instead of more than its predecessor, fulfilling the fears of Her Excellency the President, as expressed at our Convocation in 1998, that we are frogs digging deeper and deeper into our well.

What can we do about this? It is even more serious now that sources of information are multiplying so rapidly. Unless we give our students access to these they will be left behind, a fate that is increasingly disastrous in an increasingly globalized world. So far, and I believe from the material I have seen that this has been the thrust of your discussions thus far, we have made what might be termed physical access our priority. I notice for instance that the IRQUE Project, designed to Improve the Relevance and Quality of University Education, but unfortunately implemented by our University Grants Commission which does not quite understand what the words in the acronym mean, has designated the number of books per student as a benchmark of quality. Finding out how many books are borrowed per student, let alone how many use books actively, is not something they seem to have thought especially important.

So massive amounts of money are being provided, to universities and to suppliers, and doubtless to others too involved in the business, to multiply the number of computers at university, and to increase connectivity. The UGC has instituted a Project, with a highly paid Consultant, to develop internet access ˇ the result was that, for an introductory course in Current Affairs, the team turned up at Sabaragamuwa with pages and pages on the 1962 Cuban Missile Crisis that they had downloaded for our benefit. What use all this was I don t suppose they had bothered to consider, since it could doubtless be turned into a statistic that would feature on yet another Power Point Presentation.

I would suggest indeed that Internet material is even more dangerous than books, if not properly digested, because it can be so readily plagiarized. Earlier, when passages were lifted without understanding from books, there were mistakes in the copying which gave the game away. Incorporating electronic material with a modicum of care will not rouse suspicion, in a context in which we are not careful enough in checking on learning. To give you yet another anecdote, I found a few months back a candidate for promotion proudly bringing along a Master s Thesis, from Colombo University, which it turned out on questioning he did not understand. When I brought this to the attention of the Vice-Chancellor, who I should admiringly say reacted with a promptitude I had thought no longer possible in our system, it turned out that there had been no viva requirement for theses for such Master s Degree. I am happy to say that, following that query, vivas have now been introduced in such situations.

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But leaving aside the question of combating plagiarism, we should address most seriously the question of how we could develop the reading habit amongst our students. Of course we need to start young, and for this purpose we are trying, in revising the Secondary School curriculum, and materials to implement it, to introduce simple reference exercises in as many subjects as possible. For again, while much money has been spent in recent years on projects to develop libraries, not much care has been exercised on how the money has been spent. Training Colleges for instance were supplied with multiple copies of multiple volume Encyclopaedias of Hinduism. When I brought this to the attention of the World Bank official who was supposed to monitor this project, he said rather lamely that he could not understand how this had escaped his attention. I m afraid he is not alone in not really exercising with regard to government money ˇ which is everybody s money and therefore nobody s ˇ the care we would exercise if the funds expended were our own.

It is for this reason that I believe we need in the universities to set up Library Quality Circles ˇ not the Library Committees that simply authorize expenditure, but Circles that establish partnerships between librarians and staff and students to ensure the acquisition of books that will serve to develop the reading habit. For this there must be a healthy proportion of books written in simple English that will promote reading; and there must be commitment on the part of lecturers to prescribe short portions of books with a particular focus that will ensure that students have to make their acquaintance.

This is not easy, given that so many books are written for native speakers, and therefore use language and syntax that are not readily accessible. But we can at least start by drawing attention to material such as one-volume encyclopaedias, which first year students can access, and then moving on to introductory textbooks of which increasing numbers are now being produced in the subcontinent in relatively easy English.

In this regard I should mention, since it is not well enough known in the University system, an initiative of Her Excellency, in line with her concern about developing the reading habit. Funding was made available from the President s Fund, through the UGC, to encourage academics to produce simplified textbooks that would then be published commercially by established publishers. Such texts were to be targeted at first year undergraduates and also Advanced Level students who might want to read in simple English material that they hoped to study in depth later at university.

The scheme did not just subsidize material, because given the Sri Lankan context we would all have ended up recommending each other s work for such subsidies. Rather the final decision as to the acceptability of a manuscript would be made by an experienced publisher who would have to commit to producing (and therefore distributing) more copies of the book than the subsidy covered. Thus students would have low cost material, and our academics would not only have their books published by a highly reputed agent, they would also have sales and royalties on a scale unlikely if they followed the usual practice of publishing on their own, or through a publisher they funded, who would have no incentive to distribute the book actively.

The first book in the series, a medical text on Radionucleides by two young lecturers from Ruhuna University, has just come out, and it will I hope be launched shortly by Her Excellency. Meanwhile I hope that you will encourage those members of the academic staff who share your love of books, and your concern that they be used more widely, to participate in this project by preparing manuscripts that will suit the language levels of their students.

The aim of course is that, by embarking upon reading as an essential part of any academic programme, students will go on to read more widely, to select suitable material on their own through Internet Access, to take advantage of the large collections you and your predecessors have built up over the years. The world, as we have noted here, is open to us even more widely than before as a result of recent technological advances. However we have to make an active effort to ensure that our students can use these opportunities. I do hope that you will take the lead in this respect, to ensure that academics involved in teaching enter into a partnership with you to ensure that their students benefit as they did in the past from the vast world of books, electronic and in print.

Role of INFLIBNET in establishing accessibility of e-journals consortium in academic libraries in India

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Abstract

India is one of largest country in the world. It has complex higher education system with 310 universities, 15000 affiliated colleges, 10 million students with 5 lakhs teachers. There is acute shortage of funds to subscribe to important journals in academic libraries. In recent years, there has been a surge in the number of electronic journals available to academic libraries for their users to access. More titles are becoming available online via publishers and subscription agents. There is a common view amongst academic librarians that libraries are forsaking traditional print resources in favour of electronic resources. Academic libraries have moved towards a shift from print format to electronic format. Librarians today are facing increasing demands for services and stable or declining levels of fiscal and human resources. To survive in an environment of escalating expectations, libraries are looking for new answers as to how they can become more nimble and develop effective strategies and practical solutions. The way out for librarians is to work through library consortia not only to expand access to print and electronic collections, but also to develop new services. In India more than ten major consortia have emerged in the last 3-4 years, with new annual investment stakes ranging from Rs.25 lakhs to Rs.50 crores. INDEST, (the consortium of IITs, IISc, IIMs and the Engineering Colleges funded by MHRD and AICTE) and UGC-Infonet are by far the largest consortia initiatives. INFLIBNET under its consortia has played major role in providing E-journals to all academic libraries in India. The average number of journals subscribed by the Indian universities is mere 250. The timely launch of UGC-Infonet E-Journals consortium is a significant development in the history of higher education system in the country. It facilitates more than 4000 e-journal to 100 universities across the country covering major publishers. This initiative helped to get the discount of more than 85-90% on many scholarly journals and databases. The paper deals with Academic library consortia, Issues related to access to E- journal and role of INFLIBNET in bridging the digital gap of academic libraries in India.

Key words: E-journals, Academic Libraries Consortium – India, INFLIBNET, Consortia.

1 Introduction

Developments in electronic technologies ˜ computers and communication technologies ˜ have drastically affected the way in which libraries approach collection development. In the traditional environment, collection development is based on the just-in-case or ownership approach. Materials are purchased with the expectation that users would one day (if not immediately) need to use them. The same approach is taken with journals. Libraries subscribe to certain journal titles that their patrons have recommended, and maintain them in the library, cataloguing them, binding, and archiving them. With the developments in technology and the increased digitisation of sources, libraries have considered and some have implemented the just-in-time (access) approach to collection development, especially of journals. Nowadays journals that were previously only available as print are provided in electronic form by publishers or vendors.

In addition, other major developments have affected the service approach that academic and research libraries are adopting: First, is the dramatic increase over the last 20 years or so of serial and journal subscription costs; second, has been the increase in the number of available scientific and engineering journals. Libraries, faced with declining budgets, have found themselves unable to purchase all publications and materials that their users would generally expect to have. To compensate for this, the formation of various types of consortia of access to electronic resources has increased. Indian Academic libraries are no exception to this fact and moved from print format to electronic format and formed many consortia.

2 Definition of Electronic Journals

What is an electronic journal? When did they turn up? Different people might have a different impression or understanding of the term electronic journalsf. Electronic journals are often referred to interchangeably as electronic publishingf, electronic serialsf, online journalsf and electronic periodicalsf. While some authors simply take an electronic journal as a publication whose primary means of delivery to subscribers is through a computer filef 28), others define it strictly to be a full text electronic publication, which may include images, and is intended to be published indefinitelyf The only thing that can be said definitively is that e-journals are serial publications available in digital format. Some are distributed on CD-ROMs, some over the Internet. Thus an Electronic Journals is defined as the grouping of information that is sent out in electronic form with some regularity. It covers any serial or serial-like publication available in electronic format, which is produced, published, and distributed electronically.

2.1 Advantages

Electronic journals offer many advantages. They take up no physical space on limited shelving. They are accessible at any time, 24/7. They can be accessed from almost any workstation that can connect remotely to the institution s network. They can be

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searched. They can be printed on demand. They often can be downloaded as electronic files. Library users tend to see these advantages as good and are largely in favor of full-text journals in an electronic format.

2.2 The salient features of electronic Journals are

- They can be delivered to the desktop (although the desktop needs a computer!)
- They can be read by more than one person at a time
- The text can be browsed, searched and saved.
- They can include multimedia and graphics, in color, at marginal cost.
- They can be published more quickly than paper publications.
- They can be interactive; that is, they can foster an online exchange of ideas by e-mail.
- Readers can link directly to references cited in an article and also
- Articles can be retrieved directly through links from abstracting and indexing databases.
- The content can be reproduced, forwarded, modified, leading to possible problems with copyright protection and preserving authenticity.

3 . Library Consortia

The exact date for the introduction of the term library consortium is not clear but the concept of a consortium as being an association or partnership has long been a tenet of librarianship. It refers to co-operation, co-ordination and collaboration between, and amongst, libraries for the purpose of sharing information resources. However libraries have not used it widely until about the 1980s. The main drive for co-operation has been the increase in the output of publications or the Information explosion, the rise in the cost of publications coupled with stringent budget allocations, and growth in student enrolment.

Consortia are regarded as an effective strategy to increase the buying power and unlimited access to electronic resources. Publishers, aggregators offer heavy discount to their products under consortia purchase, hence member library can save significant amount of library budget. In recent years libraries have realized that there is an advantage in developing a common strategy. A library consortium may have objectives beyond resource sharing or may limit itself to resource sharing projects and activities. It can be defined as:

A library cooperative constituted by a group of libraries, preferably with some homogeneous characteristics by subject, or institutional affiliation, or affiliation to funding authorities, who join together with the primary objective of providing expanded access to information resources needed by its user community through a process of pooling and sharing information and infrastructure resources with due adherence to copyright compliances.

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The purpose of sharing itself leads to many development initiatives and programs, which needs funding and management. I suggest that every consortium should evolves or adopts a suitable constitutional framework with a defined structure as it performs the legal and administrative role of negotiating and entering into contracts for and on behalf of a group of institutions. The success rate of a consortium is higher if the group of members is homogeneous.

4 E-Journal consortium in India

In India consortium for Material Science and Aerospace collection is the first known formal consortia initiative led by the National Aerospace Laboratory (NAL) in 1998 for a few databases. This consortium aborted in its second year due to the inadequacy of Internet access infrastructure, lack of management commitment by member institutes, and mistaken perception that consortium is a bargain for discounted buying.

The first limited purpose and successful, consortia-like model can be traced to Tata Institute of Fundamental Research (TIFR) in 2000, which used the consortia model offered by Springer for multi-site licensing and cross sharing of content among all the libraries falling under TIFR s affiliation. The reason for success was one central authority in command to negotiate a model on behalf of all. Concerted efforts by a few leading libraries, publishers and vendors sustained the interests and momentum, leading to a few, open and non-formal consortia projects by the Forum for Resource Sharing in Astronomy & Astrophysics (FORSA) and the (Indian Institute of Management) IIM Libraries for e-journals from Nature, Kluwer, Blackwell, Taylor & Francis and other publishers. The Council of Scientific and Industrial Research (CSIR) can take the credit being the first major and formal consortium at national level. This well conceived pilot project with a limited central funding set a process and model for identification of resources and favorable licensing negotiation. The group firmed up its plans to launch the consortia with three major publishers Elsevier (Science Direct), Kluwer, and Springer, but could launch with only one publisher in 2001. This consortium that triggered national interest and imagination has unfortunately slid back with no more visible progress to expand beyond one publisher. Delay in the funding and resource commitment by the CSIR management appears to be the reason. The print subscription based e-access model which required the commitment of participating members to retain the spending on print renewal at the same level with a price-cap did not appear to work causing disruption in the consortial access in the second year itself. An MOU among all the participating members before launching the consortium, defining the commitments and obligations of members to the success of consortium, could have minimized some of the problems. After a two-year gap, this consortium is showing signs of recovery for a wider expansion. Encouraged by CSIR model, the Department of Automatic Energy (DAE) too went formed a consortium and signed up with Science Direct in 2002. DAE Consortium has not taken off beyond one publisher.

4.1 Indian National Digital Library in Engineering Sciences and Technology (INDEST) http://paniit.iitd.ac.in/indest/

Indian National Digital Library in Engineering Sciences and Technology (INDEST) Consortium can truly take the credit as the first well planned and thoughtfully implemented national and multi-sector consortium with both funding and management commitment. The initiative started with a national seminar in December 2000. Sustained efforts by several involved stakeholders resulted in its take off with consortia subscription for 2003, for over 5,000 e-journals from ten primary publishers and a few aggregators, and a few databases. With central funding by the Ministry of Human Resources Development (MHRD) for 38 Institutes, and a national vision, INDEST has expanded its consortium membership to 120 institutions. Consortia members are categorized in to three sections. Core members of the consortia are seven IITS and IISC. All NIITs/REC s along with few more engineering institutions fall under second category and in third category are IIITs. Accesses to resources for these categories have also been classified. For example all IITs can access to major full text database from different suppliers whereas category two institutions can access to only four fill text databases. However, IISc, IITS have major role in selection, negotiation and renewal of the e-resources. Institution desirous to access the resources can join and became member of this consortium.

4.2 Health Sciences Library & Information Network (HELINET)
http://www.rguhs.ac.in/hn/newheli.htm

The consortia momentum has started spreading towards more focused initiatives at the State level. Health Sciences Library and Information Network (HELINET) is the first such initiative of a University consortium piloted by the Digital Library at the Rajiv Gandhi University of Health Sciences (RGUHS) covering 25 medical libraries in the State of Karnataka. HELINET planned its funding for content licensing costs from the participating members, with central infrastructure and service development funding at HELIENET headquarters coming from RGUHS. WHO has encouraged this project by providing support funding for the development of a resource-sharing gateway. The University has spent substantial amount for establishing the consortium on a cooperative e-access model and subscribing to Elsevier s Science Direct, Ovid Biomedical Collection, Annual Reviews, Biomedical Suite, J-Gate Custom Content for Consortia (JCCC@INDEST)and J-Gate

4.3 UGC-INFONET E-journal consortium
http://web.inflibnet.ac.in/econ/index.htm

University Grants Commission (UGC) has launched two ambitious programs namely UGC-INFONETƒ and UGC-Infonet: E-Journals Consortiumƒ to facilitate large number of electronic resources to the academic community of the country in the year 2004. Both the projects are being executed and implemented by INFLIBNET in collaboration with UGC and ERNET India. In order to provide access to E- resources UGC has spent huge sum of amount in terms of both recurring and Non ˉ recurring grants. To understand entire gamut of work, UGC has formed a committee which is called Joint Technical and Tariff Committee (JTTC), comprises well known scholars

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and academicians of the country. The committee has recommended and prepared guidelines for connectivity to various type of university.

This is the largest consortium with a vision and plans to reach out to more than 150 + universities and several thousand colleges affiliated to these universities, over a period of time. The consortium can take credit for investing significant time for making considerable evaluation of resources for selection and obtaining the bet pricing terms and models from the vendors. The consortium is a trend-setter in thoughtfully adopted e-only model without any links to the current print holdings by its member universities

UGC- INFONET E journal consortia is milestone in the history of academic libraries and users in India. There is no formal membership structure of the consortia. All Academic institutions, which come under the purview of UGC, are members of this consortium. It is largest academic library consortium in India monitored by INFLIBNET. It is subscribing to large number of electronic journals which includes full text and Indexing and abstracting databases for the benefit of million of users in India. It offers high quality collection of 4000+ full text electronic resources from 25 different publishers to academic community, comprising of faculty, staff, researchers and students. Keeping in view the large number of university it has planned to implement in various phases.

Phase I

In first phase, (2004), fifty universities were identified and provided access to more than 2000 E-journals in different disciplines. The first fifty universities have been selected based on certain criteria, viz. existing infrastructure, number of scientific research, no of students enrolled and Internet connectivity in the campus. National Negotiation committee formed for the negotiation with different publishers judiciously selected reputed society publication and finalized the deal for 18 publishers and spent Rs. 168138043/-. These fifty universities were given financial assistance to establish campus LAN and necessary infrastructure for Internet connectivity. After establishment of network, they were asked to send the IP addresses to INFLIBNET. Accesses to E-journals were ensured by using IP address of the universities. INFLIBNET forwarded the IP addresses of respective universities to the publishers / aggregators. After series of the meeting with publishers, librarians MOU were signed and it was formally launched by His Excellency Honorable Dr. A P J Abdul Kalam, the President of India at Vigyan Bhavan, New Delhi on 28th December 2003 in the Golden Jubilee Celebration of UGC

Phase II

New set of 50 more universities were given grants for network infrastructure in the year 2005. As happens in consortia more you add the number, the prices comes down. Prices for these 50 universities were finalized in the first phase of negotiation with the vendors. The negotiation Committee managed to get huge discount for these new set of universities. The costs for inclusion of these universities in the consortium were very small.

Phase III

In the third year (2006) the consortium would cover remaining universities and colleges. There are around 50 universities who have been deprived of the access to E- journals because of the lack of network infrastructure. Suitable measures have already been taken and grants these universities were given for campus LAN. As soon as they accomplish the connectivity they can join this consortia without any membership fee and can access entire bundle of E- resources covered under UGC-INFONET E-journal consortium. There won t be any financial burden to the universities. After three years, UGC will review the model licensing of this consortia

4.4 Electronic resources subscribed under UGC-Infonet E-journals consortium

The **UGC-Infonet E-Journals Consortium** subscribes to the following resources. These resources are available to 100+ universities / institutions as per the recommendations of the National Negotiating Committee. All electronic resources are accessible through IP based from the publisher s Web site.

Name of the Publisher	No. of Journals/ Database	Coverage/ Back files
American Chemical Society(1876)	31 Journals	Vol. 1 Issue 1
American Institute of Physics	18 Journals	1997-Archival files vary from journal to journal.
American Physical Society	10 Journals	1997-
Annual Reviews	29 Journals	Archival access for the last ten years
Biological Abstract	One Database	1969-
Cambridge University Press	189 Journals	1997-
Chemical Abstracts Services (Sci-finder Scholar)	One Database	1907-
Elsevier Science	34 Journals	1995-
Emerald	28 Journals	2001-
Encyclopedia Britannica	National site Licensing	
Gateway Portals Ingenta and J-Gate	Cover more than 10,000 Journals up to abstract level	
Institute of Physics	36 Journals	Vol. 1 Issue 1
J-Store	457 Journals	Vol. 1 Issue 1
MathSciNet	One database	1940 to current
Nature	1 Journals	1997-
Portland Press	4 Journals	1996 to current
Project Muse	222 Journals	1999-
Royal Society of Chemistry	23 Journals + 6 database	1997-
Science Online	1 Journals	1996 -
Springer & Kluwer	1217 Journals	1997-
Taylor & Francis	1105 Journals	1998-

5. Lessons from the Indian experience

The consortium development initiatives in India are of recent origin and are still evolving.
Lessons from these initiatives listed below can serve as useful pointer for the current and new initiatives.

* Raising costs and depleting size of journals population in the libraries, constantly felt need for resource-sharing, concerns about declining research productivity, and enthusiastic desire to adopt new technology (web and digital library) have been the driving forces for the development so for.

The approach has been somewhat amateurish with personal styles of involved people over-taking professional approach. Most of them have not so for evolved legal and institutional framework and, basic and

* Essential documentation. Some of them do not even have a minimum required documentation like a common MOU among participating libraries. Most consortia do not even have a proper and distinct name identity.

* Resource identification has lacked deeper study and analysis. Selection has been largely vendor driven and limited to selection committee meetings and cursory reviews. Independent specialist groups need to be set up for a detailed comparative analysis of resources and technology platforms that are potential candidates for selection. Assigning this important task to credible and independent professional consultant or to an academic organization is a desirable option.

* Funding strategies for a sustainable model are not well defined. While quite a few consortia have taken off with significant volume of central funding, the doubt persists in the minds of stakeholders about the continuity of these consortia purchases.

* A formal and well-defined commitment from members is missing in many of the consortia. Consortia managers need to evolve a formal MOU to address this issue.

* Infrastructure related issues are being addressed seriously by all concerned. But the progress is slow.

* Training needs and implementation are not well understood. INFLIBNET has organized five national seminars and many user awareness programme. It needs many more programmes focusing all type of users in the university

* Consortia activity is a serious business and needs committed full-time leader with executive staff depending upon the size and investments, and management team to direct the consortium. The management teams are in place in most of the

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consortium in the form of committees, but there is no full-time, full function leadership with executive authorities in most consortia. Consortium management itself needs a separate funding for its operations which includes:

> Comparative study of information resources and technologies for selection and up-gradation.
> Development of well defined RFP (Request For Proposal) document
> Promotion of consortia activities
> Managing licensing (acquisition) process
> Membership Management
> User training and usage promotion
> Raising finances and Fund Management

- There is a need to for setting up a unit to regularly review and benchmark the available information products, systems, services and technology platforms to compare and assess their quality and utility for Indian users at large.

5 Role of Information and Library Network Centre (INFLIBNET)

http://www.inflibnet.ac.in

INFLIBNET Centre is an autonomous inter-university centre of UGC (University Grants Commission) under Ministry of Human Resources Development, Government of India. It is a national institute in the area of Library and Information Science for promoting library automation, resource sharing, cooperative development among the academic libraries and other R & D libraries in India. Centre is directed towards modernization of libraries and information centers with aims at establishing a mechanism for information transfer and access to scholarship, learning and academic pursuits. Objective of the Centre is to establish a national network of libraries and information centers including universities, institutions of higher learning, research and development, sharing and its utilization at national level. It is basically a co-operative endeavor in resource development, sharing and its utilization at national level.

The idea of INFLIBNET was conceived in 1988 and implemented by the UGC in April 1991. Its main objectives are to computerize university libraries, create union databases of their holdings, facilitate resource sharing through networking, and provide speedy access to the information at the national level. Though INFLIBNET had some teething problems, it was able to speed up the implementation of its activities during the last few years. Actually the involvement of INFLIBNET has created an IT culture in Indian university libraries. The Center has provided financial grants to 142 Universities so far to establish necessary infrastructure for the computerization of university libraries and connect them into a national network. More than 1000 librarians have been trained through a series of workshops, training programs, and on-site trainings. Union catalogues and databases have been developed to provide access to holdings of libraries, viz., union catalogue of books,

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serials, theses, and directories of experts, projects. These databases have been updated constantly and available online for access (http://www.inflibnet.ac.in).

6.1 Establishment of network

UGC- INFONET E-journal consortium is first consortium to address the infrastructure and network connectivity issues at the member library sites before planning the content licensing stage. All member libraries have been given substantial funds to purchase the systems and establish the network connectivity, depending upon the geographical location of the university. The ERNET India has been given the responsibility of the network design and architecture . Based on the recommendation of JTTC, ERNET has given following two types of connectivity.

- Universities in vicinity of PoPs to be provided connectivity through Radio Links or Leased Lines
- Connectivity to all other locations to be provided by V-SATs

The size of university varies from place to place. There are central universities, deemed universities and state universities. Depending upon the type of university, the speed of the connectivity and network infrastructure has also been categorized in to three different types. They are :

- 2MBPS Lines
- 512 KBPS
- 216 KBPS

6.2 ERNET (Education and Research Network)

ERNET was initiated in 1986 by the Department of Electronics (DoE), with funding support from the Government of India and United Nations Development Program (UNDP), involving eight premier institutions as participating agencies--NCST (National Centre for Software Technology) Bombay, IISc (Indian Institute of Science) Bangalore, five IITs (Indian Institutes of Technology) at Delhi, Bombay, Kanpur, Kharagpur and Madras, and the DoE, New Delhi. ERNET began as a multi protocol network with both the TCP/IP and the OSI-IP protocol stacks running over the leased-line portion of the backbone. Since 1995,however, almost all traffic is carried over TCP/IP.

ERNET (Education and Research Network) has made a significant contribution to the emergence of networking in the country. It practically brought the Internet to India and has built up national capabilities in the area of networking, especially in protocol software engineering. It has not only succeeded in building a large network that provides various facilities to the intellectual segment of Indian society--the research and education community, it has over the years become a trendsetter in the field of networking.

6.3 Activities and achievements

In last more than one decade INFLIBNET has successfully accomplished major assignments and brought IT culture in Indian Universities INFLINBET is nearing completion of a decade of its existence. During the last ten years, it has ups and downs and passed through its teething troubles. Though it is developing and fast expanding in size, resources and services, some significant results are visible and note worthy. This progress has been possible only due to the continuous support of the parent body UGC and the participating libraries. Some of the significant results are listed here.

- Library Automation in Indian Universities began with the initiative of INFLIBNET. It has developed cost effective user friendly Library management software named (SOUL) software for University libraries which is now installed in more than 600 institutions in India.

- Developed online union catalogue (books, serials , theses) of participating libraries which consist of seven million titles contributed by 103 universities. It can be accessed from INFLIBNET site http://www.inflibnet.ac.in

- Maintained online profiles (Experts Database) of scientists and academics in India

- To access various databases developed by the Centre, suitable search engines has also been developed.

- Provided financial support for library automation in 1990s to the tune of Rs. 6.5 laks each to 142 university libraries for the purchase of computers, required software and establishment of Network

- Recurring grant for five year for conversion of printed card in to machine readable form

- Core facility grant of Rs. one lakh to 65 libraries to establish core facilities and get connected to network for accessing the information available on the internet and other libraries.

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- Organized intensive and series of training programme to upgrade the skills of library professionals in the field of ITC

- Organized special training programme by visiting each universities in the country.

- Recently the INFLIBNET has started providing the regional level training to help the librarians from the college libraries to provide the necessary support. These courses are conducted in collaboration with the university library / dept. of Library and Information Science.

- Providing the technical guidance to all the libraries for implementation of IT

Implemented MARC-21 interface in SOUL software

- Providing various kinds of information services such as CD-ROM based services, access to OCLC first search, Contents page service,

- INFLIBNET Conducts annual convention to provide a platform for librarians and IT professionals in the form of CALIBER. which has become the only important forum to discuss the modern trends in library.

- A special convention viz (PLANNER) Promotion of Library Automation and Networking is being organized every year for the benefit of the librarians in the North Eastern region. Brings out series of publications to promote the cause of INFLIBNET.

- INFLIBNET has initiated two major projects viz. Retrospective Conversion of collection of five major libraries and Six Document Delivery Service Centres. These have been initiated to make an optimum use of existing resources and promote resource sharing among member libraries.

- Providing large no. of E-journals to entire academic librarie4s in India under the UGC- INFONET ˇ E- journal Consortium

More importantly INFLIBNET has been able to create an IT conscious environment in the university libraries. Librarians have now accepted and eagerly working to bring these changes in their libraries.

7   Conclusion

There is certainly going to be sea changes in terms of quality in higher education system in India. Gone are the days when university library has access to only limited journals and hardly access to foreign journals. Now users can access to high quality, highly referred journals from their desktop. INFLIBNET with the help of UGC has played major role in bringing the IT culture in university libraries in India.

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Creating e-Information environment for academic excellence through implementing INDEST consortia: a case study of the Central Library of Indian Institute of Technology Madras

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Abstract

> The present paper discusses the importance of e-information environment to achieve academic excellence in university sector. It also highlights the attributes of academic excellence and the contribution of IIT Madras to manpower development and research. The paper also discusses the consortium initiatives among IITs and e-resources made available under INDEST to the participating institutions. Initiatives for creating IT infrastructure, conducting information literacy programs, selected web based library and information support services provided to users and strategic issues based on the experiences gained at IIT Madras are also highlighted.

1. Introduction

As we know that during ancient days libraries used to be termed as the storehouse of books and the librarians as the custodians of books. With the passage of time as well as the developments in computer and communication technologies, the concept of library and librarianship has totally changed. Currently libraries are treated as the gateways to knowledge resources, center for creation and recreation of academic activities and similarly librarians as the knowledge manager or interpreter of thought contents. Pursuant to this, presently librarians are not only involved in the collection building of printed resources but also to make all necessary arrangements to procure digital resources, create e-information environment to manage enhanced and diversified information needs of users under digital era. Realizing the importance of this fact, the Central Library of IIT Madras is deeply engaged to create e-information environment so that academic excellence is achieved. Susan Higgins states that academic excellence is the behavior that emerges within an institution whose objective is to bring out the best in all its members within the frame of mutually agreed upon standards. He further adds that an institution committed to academic excellence has the following attributes:

- The entire institution resonates in its support of teaching and learning; and of the growth and development of its members
- Decisions are guided by their impact on the teaching and learning environment
- Administration and staff culture is nurtured to support the academic mission
- Expectations of students, faculty and staff are high
- Each person takes his/her role seriously
- Every member of the university community has an opportunity to succeed
- The faculty is committed to facilitating the transformation of students
- The faculty and students are excited by intellectual pursuits
- Opportunities exist for students to select a course of study that is appropriate to their needs and abilities

Keeping in view the above facts, IIT Madras has vision to be an academic Institution in dynamic equilibrium with its social, ecological and economic environment, striving continuously for excellence in education, research and technological service to the nation. 15 departments carry out the activities of the Institute in various fields in science and technology and five research centers. The Institute has nearly ninety well-equipped Laboratories attached to the different Departments. The contribution of IIT Madras to Manpower Development and research is given below in tables 1& II

Table: 1: Contribution to Manpower Development

Year	Ph.D	M.S	M.Tech	M.Sc	M.B.A	Dual Degree	B.Tech	Total
2003-04	73	109	417	86	40	66	355	1146
2002-03	48	80	371	79	-		361	939
2001-02	54	88	390	94	-		372	998
2000-01	82	98	320	94	-		356	950

Source: Annual Report (2003-04), IIT Madras, page 1
Annual Report (2002-03), IIT Madras, page 1
Annual Report (2001-02), IIT Madras, page 1
Annual Report (2000-01), IIT Madras, page 6

Table: II : Contribution to Research

Year	Research Paper Published	Papers Presented	Total Papers
2003-04	392	610	1002
2002-03	368	531	899
2001-02	405	403	808
2000-01	402	406	808

Source: Annual Report (2003-04), IIT Madras, page 2
          Annual Report (2002-03), IIT Madras, page 1
          Annual Report (2001-02), IIT Madras, page 2
          Annual Report (2000-01), IIT Madras, page 6

2. Selected initiatives for the creation of E- Information environment

The Central Library is one of the central support services of the Institute, which has been awarded ISO-9001: 2000 certification by RWTUV of Germany for the establishment and maintenance of quality library systems, procedures, products and services. It is well equipped with all modern facilities and rich resources in the form of CD-ROMs, On-line databases, printed and non-printed documents on Applied Sciences, Engineering, Technology, Bio-Technology, Humanities, Management, Social Sciences and other new emerging areas. Institute has provided the support to the Central Library to develop strong information infrastructure with the objective to provide an extensive spectrum of services to all users as efficiently and cost-effectively as possible through the optimal application of IT and other relevant resources, supported by the services of information aggregators. Brief statistical profile of the Central Library is given below:

S.No	Item	Size
1	Total Collections	3,81,355
2	Current Journals	1114
3	Members	6,874
4	No of Journals/Books Bound	3867
5	Expenditure on Books	Rs.1,31,14,341
6	Expenditure on Journals	Rs.4,24,28,190
7	Overdue Collection	Rs.3,26,780
8	Photo Copy Charges collected	5,84,300

Source: Annual Report (2003-2004), IIT Madras, pages 260-261

3. Information Technology Infrastructure

IIT Madras has provided the following IT infrastructure to provide world class library and information support services for achieving academic excellence.

- Wireless Networking and Digital Knowledge Center with over 100 systems

- Internet Connectivity (10 MBPS to be upgraded 32 MBPS soon)
- Sunfire File Servers, Web Servers, Workstations and Thin Clients
- Scanners-Handheld and Flatbed
- Portable Data Capture Unit and Electronic Display System
- Laser Printers and Thermal Laser Printer
- CD-Writers and CD-Printer
- Laptop, LCD, OPACs
- CD-ROM Databases, E-Journals, Standards Databases
- VTLS-Virtual Library Management Software with digital library interface
- On-line Full text as well as Bibliographical Databases
- E-Books, e-Reference Sources, Media Resources
- Fiber Optic Cables and 50 KVA UPS

With the help of the above Information Infrastructure, Central Library is considerably comfortable to create e-information environment on the campus and also serve users effectively and efficiently. For this purpose, we have created a comprehensive and interactive library website. The screenshot of the Central Library website is given below :
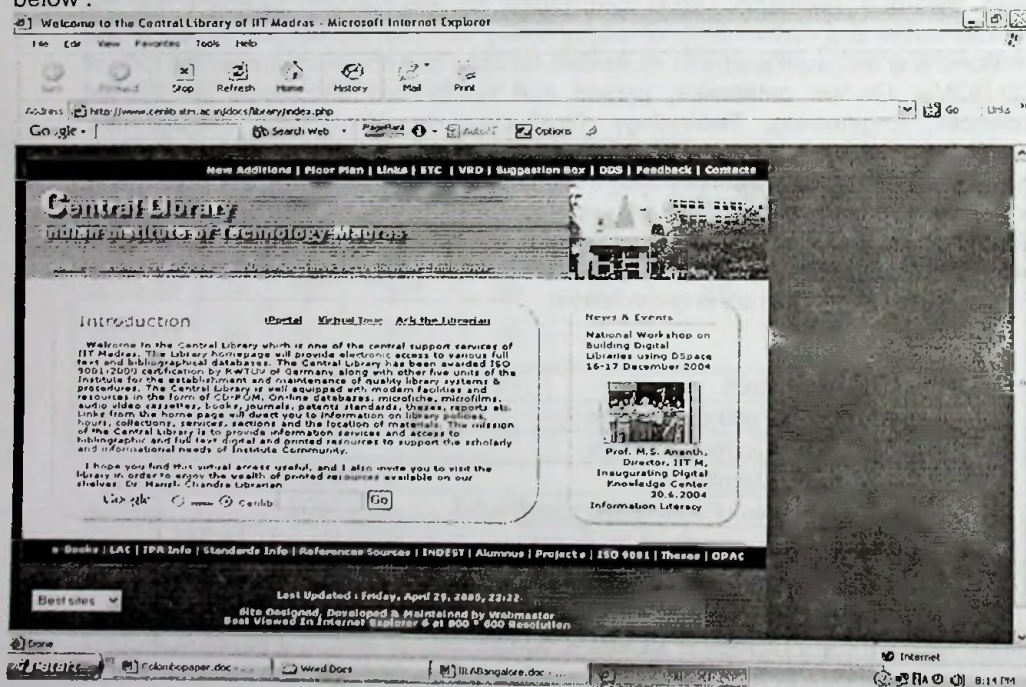
Based on the Central Library website, we are able to promote effective, encouraging, and users friendly e-environment for the campus community. Selected services are listed below :

4. Digital Reference Services

Wasik, J. M. (1999) states that digital reference and Ask A services are Internet-based question-and-answer services that connect users with experts in a variety of subject areas. Keeping this fact in view as well as the importance of digital reference service, the Central Library of IIT Madras has initiated to provide digital reference services with the following objectives

- To extend library and information services at the doorstep to remote users
- To provide reference service to the industries under IAS Scheme
- To have continuous interaction with users in virtual environment

Under this Virtual Reference Desk has been provided to assist the users at their desktops and doorsteps. This page contains information about the reference collections available in the Library along with their locations. The information about the contact person is available on this page. An e-mail link has also been. Provided for virtual contact with the staff. Screenshot of the Virtual Reference Desk (VRD) is given below :

4,1. Ask the Librarian

The Central Library has created separate web page for providing an opportunity to a user through highly specialized service called Ask the Librarian. The Librarian answers the reference queries asked by end user through this facility on priority. The service is very popular amongst students, faculty, alumni, staff and industrial associates. The screen shot of the web page is given below

4.2 Information Literacy Program

JISC (Joint Information Systems Committee) on Information environment states that the following features are key aspects of the evolved information environment

* Fit to serve all kinds of digital content.
* Fully supporting the submission and sharing of research and learning objects.
* Providing a range of meaningful, rich and innovative methods of accessing electronic materials
* To enrich and develop the learning and research process.

Realizing, the importance of the above statement, the Central Library of IIT Madras is deeply engaged in Information Literacy activities through- bringing out various brochures, pamphlets, fact sheets, tutorials, conferences, invited talks, specialized presentations for the faculty, students, industries, library staff. Some of the selected latest ILPs organized by the Central Library are given as under

- Digital Information Management on 13-01-2005
- Scholarly Information on 12-01-2005
- Development in Search Engines on 11-01-2005
- Building Digital Libraries using DSpace during 16-17th December 2004

The following table gives us an opportunity to see the usage of Internet in SAARC region, which is one of the major factors for creating user-friendly e-information environment and culture in the Institutions of higher learning. This motivates us to develop integrated, dynamic e-environment for achieving academic excellence in teaching, research, learning, consultancy and continuing education in all the areas of higher education

INTERNET USAGE AND POPULATION IN SOUTH ASIA

ASIA	Population (2005 Est.)	Internet Users, (Year 2000)	Internet Users, Latest Data	Use Growth (2000-2005)	Penetration (% Population)	(%) Users in Asia
Bangladesh	134,792,167	100,000	243,000	143.0 %	0.2 %	0.1 %
Bhutan	1,797,542	500	15,000	2,900.0 %	0.8 %	0.0 %
India	1,094,870,677	5,000,000	39,200,000	684.0 %	3.6 %	13.0 %
Maldives	294,087	6,000	15,000	150.0 %	5.1 %	0.0 %
Nepal	24,947,198	50,000	80,000	60.0 %	0.3 %	0.0 %
Pakistan	160,166,742	133,900	1,500,000	1,020.2 %	0.9 %	0.5 %
Sri Lanka	19,466,567	121,500	250,000	105.8 %	1.3 %	0.1 %

Source: http://www.internetworldstats.com/stats.htm

5. Consortium Initiatives among IITs

There are various factors which motivate Indian librarians to share their available resources within respective institutional framework. Some of them are listed below :

- Shrinking fiscal resources
- Price-hike in S&T journals
- Information is treated as the factor of production
- Publications explosion in the area of science, engineering & technology
- Avoiding duplication of information resources
- Increased and diversified R&D information needs
- Providing enhanced coverage of information resources and services
- Meeting potential information needs of faculty,students,staff & industries
- Generation of satisfaction among users
- Recent trends and developments in ICT
- Optimum utilisation of resources
- Emerging trends in librarianship principles and practices
- Self sufficiency

The factors listed as above and the goals of respective Institutes altogether motivated IITs also for sharing their resources. Consequently, IIT Delhi took a lead in organising a group discussion of the librarians of all IITs on 23rd March, 1986 to discuss resource sharing so as to make use of each others resources effectively and efficiently. Next to this, during 1988, IIT Kanpur organised resource sharing meeting of all librarians as well as the concerned faculty involved in the library automation projects at respective institutes with the objective to discuss the various practical problems and issues to implement resource sharing among IITs.   Similarly, IIT Bombay took lead to organise resource sharing meetings of all librarians of IITs, Tata Institute of Fundamental Research, and Bhaba Atomic Research Centre during 1995 and 1998. Consequently, all librarians agreed to finalise an agreement of co-operation with the following decisions:

- Consortium of libraries was conceived under which participating libraries will share resources through efficient inter library loan system. The consortium will explore the possibilities of availing the facilities extended by the publishers in susbcribing periodicals in multiple copies in print as well as electronic media.
- Each participating library will function as a provider library for a set of periodicals and thus be committed to maintain the subscription of these titles and will not delete any title without seeking the approval of the consortium.
- Each library will prepare a union catalogue of periodicals holding available in their library and make it available to the participating libraries.
- All participating libraries will maintain the collection of photocopies of articles received under the resource sharing agreement to meet repeated/multiple requirements and to avoid the duplicate requests.

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- All participating libraries will open an e-mail account to deliver on-line doucment delivery service on priority

Further to these initiatives, IIT Kharagpur also organised resource sharing meeting on 2nd and 3rd September, 1999. The librarians reviewed the progress of the subscription of current journals on consortium basis. Other issues discussed were mainly the preparation of union catalogue for 2000, infrastructure and man power requirement, database creation of periodical holdings of all IITs and BARC, exchange visit of staff. The work regarding agreed activities like databse creation of periodical holdings is in progress which is being undertaken at IIT Madras. In this direction, recently, IIT Madras has completed the project to compile the Catalogue of Periodicals containing the holdings of the periodicals subscribed by the Central Library of IIT Madras since inception. The Catalogue of Periodicals was formally released by Prof. M.S. Ananth, Director of IIT Madras on 08-02-2002 and sent to all IITs. IIT Kharagpur again organised resource sharing meeting focussing on the digital initiatives undertaken at each institute on the eve of National Conference on Information Management in Electronics Libraries during 26th - 27th February 2002.

5.1 Indian Digital Library in Engineering Sceince and Technology (INDEST)

IITs are involved to discuss and debate about resource sharing implementation since 80 s. To give the practical shape of resource sharing discussions Ministry of Human Resource Development, Government of India constituted a MHRD Consortia with Expert Group comprising the representatives from IITs / IISc / RECs. In this direction, the first meeting of Experts Group was held on 19th July, 2002 in New Delhi followed by another meeting on 10th September, 2002 in Bangalore. Various presentations were invited from publishers to present their electronic databases as well as e-journals products. It is brought to the kind notice that consortia with collective bargaining have successfully brought down the cost of e-Journals and e-databases. The Ministry of Human Resource Development (MHRD) has set-up the Indian Digital Library in Engineering Science and Technology (INDEST) Consortium*f*. The Ministry provides funds required for the subscription to electronic resources for 38 institutions including IISc, IITs, NITs, IIMs and a few other centrally funded Government institutions through the consortium headquarters set-up at the IIT Delhi. Besides, 60 Government or Government-aided engineering colleges and technical departments in universities have joined the Consortium with financial support from the AICTE. Moreover, the INDEST Consortium, as an open-ended proposition, welcomes other institutions to join it on their own for sharing benefits it offers in terms of highly discounted rates of subscription and better terms of agreement with the publishers. All electronic resources being subscribed are available from the publisher s Website. The screenshot of INDEST is given below:
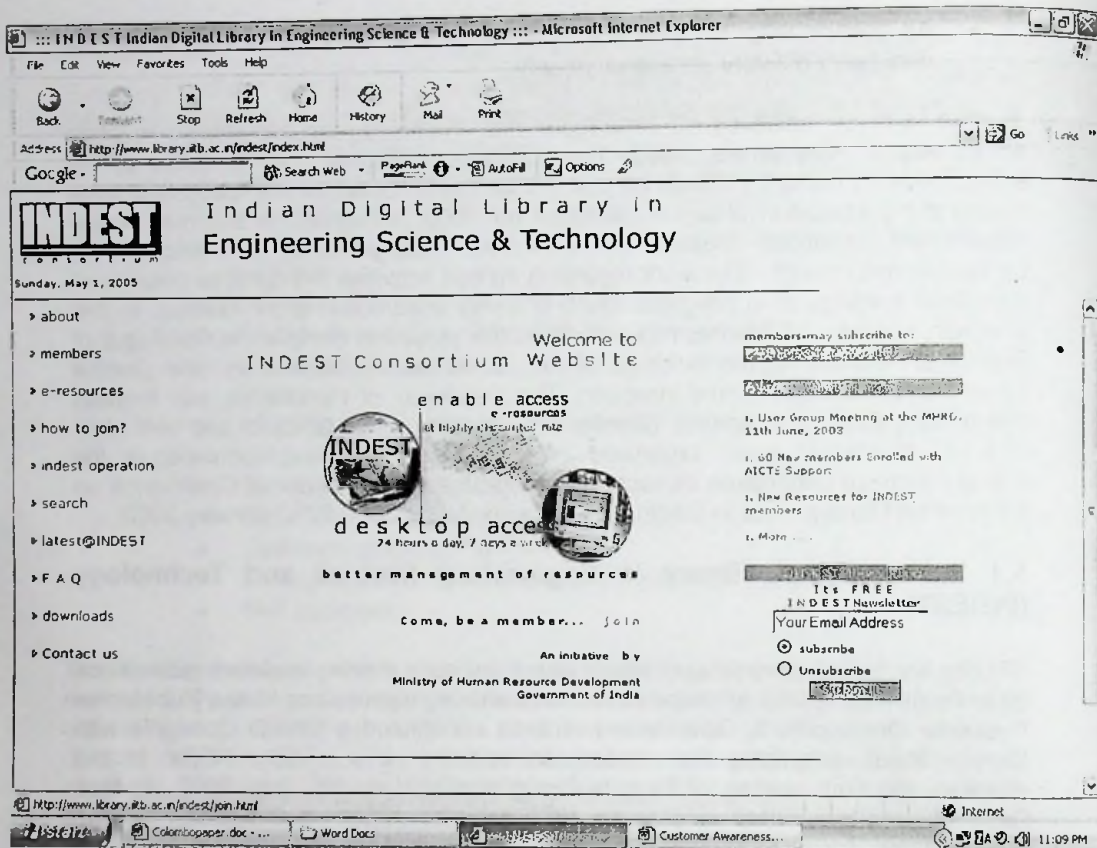
It is a fact that the INDEST Consortium is the most ambitious initiative taken so far in the country. Various institutions in India are trying to get advantages of INDEST experience in their respective environment. The benefit of consortia-based subscription to electronic resources is not confined to 38 major technological institutions in the country but is also extended to all AICTE-accredited and UGC-affiliated institutions 15 engineering colleges and institutions have already joined the institutions. The following e-databases are finally made available for access to all participating institutions as per their level.

- EIL Online
- Science Direct
- Springer Verlag
- ProQuest ABI /INFORM
- ACM Digital Library
- COMPENDEX
- INSPEC
- Web of Science
- SciFinder Scholar
- MathSciNet
- JCCC (The J-Gate Custom Content for Consortium)
- JGATE
- ProQuest Applied Science and Technology Plus
- ASCE Journals
- ASME Journals
- Nature
- Emerald

Apart from the above databases subscribed through INDEST Consortia, the Central Library has subscribed the following electronic full text databases

- Institute of Physics (IOP)
- American Institute of Physics Journals
- American Physical Society Journals
- American Chemical Society Journals
- ISO Standards on Civil Engineering
- EJ Server
-

To maximize and popularize an effective and efficient use of e-resources, Central Library has created a very comprehensive and interactive website with various related hyperlinks with the objective to provide continuous and uninterrupted services to the faculty, students, staff and industries. Very recently we have implemented VTLS-Virtual International Library Management Software with digital library interface. Recently, iPortal has been made operational which is more effective user interface for using e-resources. The screenshot of iPortal is given below

Patron Access | Save Session | Close Session

Indian Institute of Technology Madras
Central Library iPortal

Home   Keyword   Heading Keyword   DDS   External Database   Expert   Cart   Help

Quick Search

Ask the Librarian | Take a Virtual Tour

Search Terms:

- Anywhere
- Books
- Theses
- Periodicals

[Search]

Browse

Search Terms:

Author

[Search]

Major Guidelines for the Users

1. Ignore punctuation and capitalisation
2. Ignore stop words such as articles prepositions
3. You can see the materials held by the library.
4. Registered users only can check details of their use of the library, such as loans and the status of reservation.
5. If applying search limits (date, language, format, etc) set them before entering search
6. Omit initial articles when conducting a title search
7. Punctuation is necessary only in call number searches

Quick Links

Library Homepage
Institute Homepage
Standards
Nature Journals
Web of Knowledge

Recent Additions
New Books List

Other Resources
e-Journals
e-books
Current Journals
Periodicals Holdings
Videos

Reference Sources
Maps
Citation Guides

Using this catalog...

Welcome! You will notice that the left side features a *Quick Search* area that will allow for basic keyword searches.

For more precision, use the *Keyword Search* button in the row of button across the screen to perform the same search but with more control over where 'hemingway' should appear.

Chameleon iPortal Tools

Patron Self-Registration
Events Calendar
Virtual Reference Chat Room
Thesaurus
SAB Classification Tool

6. Central Library Response to changing e-Information Environment

Realizing the importance of Emerging Electronic Information Environment as well as the Role of Academic Libraries in Teaching, Learning, and Research, the Central Library has responded to these challenges through establishing and upgrading information infrastructure; realigning organizational structures; developing new skills; initiating collaborative partnerships with INDEST, digitizing PhD theses, researching client needs, implementing VTLS-Virtual International Library Management Software, conducting Information Literacy Programs, Smart Card implementation, RFID Technology, Electronic Security System, Creating Dynamic and Interactive Library Website and creating Digital Knowledge Center with over 100 user terminals.

7. Role of Librarians in Electronic Information Environment

It is also necessary that the librarians and the staff should come ahead to understand and upgrade their existing knowledge level about the various tools and techniques of modern information handling and support their management to implement the modernization of libraries so that the target and priorities of institutions are met

successfully. There is need to be self-directed, self motivated and receptive to meet the challenges faced in libraries. Further to this, it is appropriate to mention about the Stephen Pinfield who has highlighted the role of librarians in his paper entitled managing electronic library services: current issues in UK higher education institutions available on http://www.ariadne.ac.uk/issue29/pinfield/ .

- Multi-Media User ˘ comfortable with a wide range of formats
- Intermediary ˘ with a good knowledge of sources and user requirements
- Enabler ˘ proactively connecting users with information they require
- Metadata Producer ˘ creating records of information sources in a variety of schemas
- Communicator ˘ formally and informally connected with users
- Team Player ˘ working with colleagues in library, IT services and academics
- Trainer / Educator ˘ taking on a formal role to teach information skills
- Evaluator -for resources on behalf of users
- Negotiator ˘ dealing with publishers and suppliers
- Project Manager ˘ leading on development projects to enhance the services
- Innovator ˘ looking at improved ways to deliver the services
- Fund-Raiser ˘ working for greater income for the institution

8. Issues for Discussion
Based on the above facts and experience, the following issues emerge for discussions

1. ICT Infrastructure-Planning and Implementation
2. Handling Digital Rights Management
3. Management of Electronic Resources
4. Content Creation and its Management
5. Web based Library and Information Support Services
6. Digital Preservation Strategy
7. Consortia Planning and Implementation
8. Information Literacy Program
9. Quality Systems and Services
10. Human Resource Development

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9. Conclusion

It can be concluded that there is strong need to create e-information environment in all institutions of higher learning. The Academic administrators need to consider to provide all necessary IT infrastructure to libraries and information centers to facilitate electronic delivery of information products and services to end users @ doorsteps @ any time @ anyplace. Librarians also need to redesign and re-orient their initiatives and efforts to exploit the gain of consortia initiatives in their respective environments

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The quality of University libraries : a Sri Lankan perspective

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Abstract

Though the traditional image of the university library as a repository of knowledge is rapidly changing in the age of electronic information its role as a learning resource makes it an important determinant of institutional and study programme quality.

In the recent past the Sri Lankan universities have come under closer public scrutiny resulting in a need for greater social accountability and relevance. In response several quality oriented reforms and innovations have been initiated. These include an institutional and subject review process. creation of a quality assurance and accreditation board. developing subject bench marks. qualification descriptors and codes of practice for academic procedures. competitive funding for quality enhancement, institutional block grants for improving learning environment and information technology. and programmes to enhance the quality of academia via global connectivity.

Although the library has to play an important role in all of the above, its actual involvement has been variable and in most instances. inadequate. The author who as a senior academic familiar with most of the above programmes examines the reasons for the Cinderella status of the university library in Sri Lanka. The need for developing benchmarks and performance indicators for university libraries and the need to develop consortia for effective information sharing is also addressed briefly.

Key words: Quality Assurance, University Library, Sri Lanka, Benchmarks, Performance indicators

Introduction

In the recent past Sri Lankan Universities have come under closer public scrutiny resulting in a need for greater social accountability and relevance. This need has been clearly enunciated in the following passage taken from the introductory chapter in the Quality Assurance Handbook (2002) for Sri Lankan Universities.

> Universities are public institutions. They hold and must conscientiously exercise and be seen to exercise their responsibility for quality and standards. Higher education is a public good and is of crucial importance to the health, wealth and well being of society and the economy in Sri Lanka. University accountability for quality and standards is a key factor in promoting and safeguarding public confidence in Sri Lankan higher education*f*.

In response to this need several quality oriented reforms and innovations have been initiated within the Sri Lankan university system. These include an institutional and subject review process, developing subject bench marks and qualification descriptors, developing codes of practice for academic procedures, creation of a standing committee for quality assurance and accreditation as a precursor to an independent quality assurance and accreditation council, IRQUE project which provides institutional block grants for improving the learning environment and information technology as well as competitive funding for quality enhancement of study programmes, a project to enhance the quality of academic research via global connectivity and creation of a National Centre for Advanced Studies in Humanities and Social Sciences. Although the library has to play an important role in all of the above, its actual involvement in these programmes has been variable and in most instances inadequate. The reasons for this marginalization of the library in quality related programmes needs to be examined.

Quality Assurance (QA) project

This project which has functioned under the auspices of the QA committee of CVCD (Committee of Vice Chancellors and Directors) /University Grants Commission, has several major activities. They are depicted diagrammatically in relation to the university system. (Figure 1).
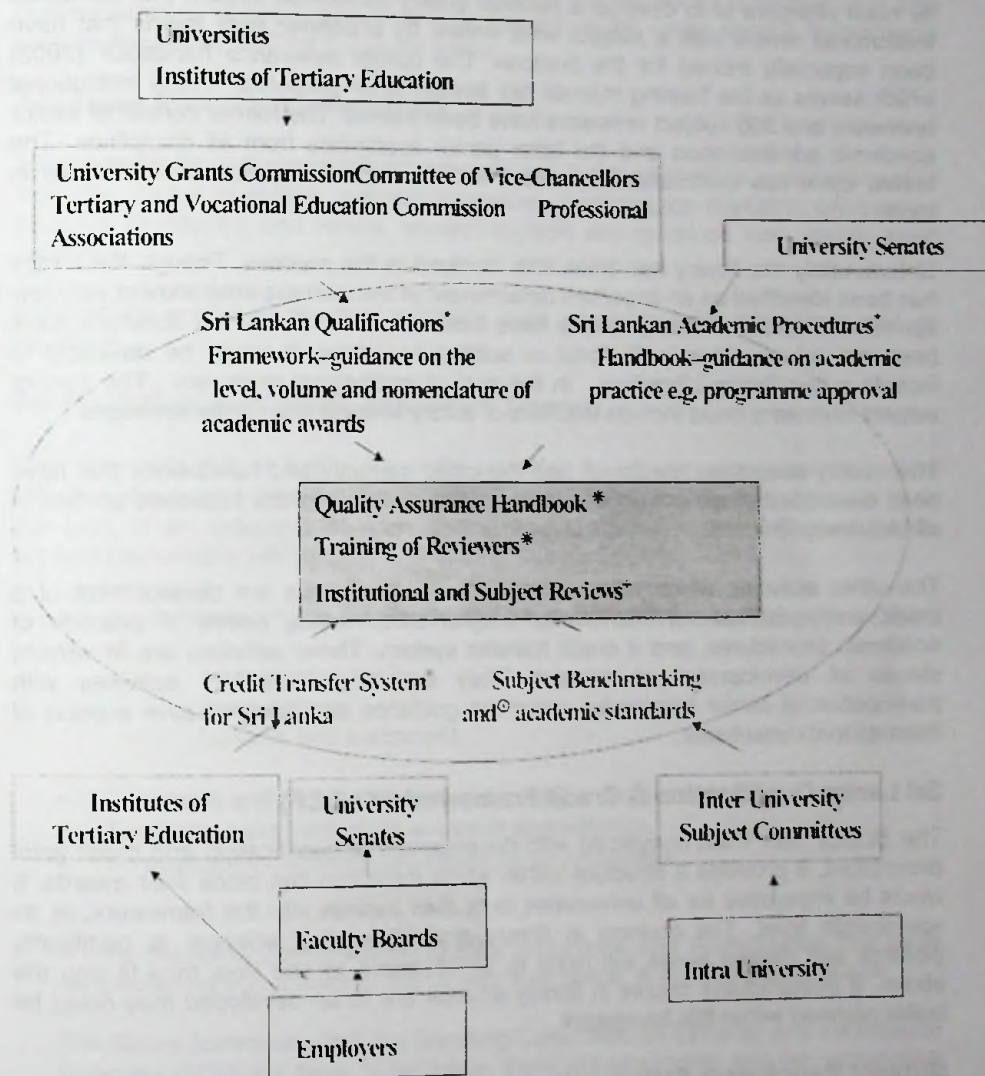
Quality Assurance Project – Sri Lanka

Universities

Institutes of Tertiary Education

↓

University Grants CommissionCommittee of Vice-Chancellors
Tertiary and Vocational Education Commission   Professional
Associations

University Senates

Sri Lankan Qualifications*
Framework–guidance on the
level, volume and nomenclature of
academic awards

Sri Lankan Academic Procedures*
Handbook–guidance on academic
practice e.g. programme approval

Quality Assurance Handbook *

Training of Reviewers*

Institutional and Subject Reviews+

Credit Transfer System*
for Sri Lanka

Subject Benchmarking
and© academic standards

Institutes of
Tertiary Education

University
Senates

Inter University
Subject Committees

Faculty Boards

Intra University

Employers

Figure 1 : Quality Assurance project ˇ Sri Lanka

Source : K. Tillakeratne, Workshop on quality of academia.

November 2004

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Review Process

Its main objective is to develop a national quality assurance system that combines institutional review with a subject level review by academic peer teams that have been especially trained for the purpose. The quality assurance handbook (2002) which serves as the training manual has already been prepared. Thirty institutional reviewers and 300 subject reviewers have been trained. The former consist of senior academic administrators and the latter senior academics from all disciplines. The review cycle has commenced but there is lack of continuity due to constraints in funds.

Unfortunately the library has been little involved in the process. Though the library has been identified as an important determinant of the learning environment very few specific indicators of library quality have been identified. So far no librarians have been trained as either institutional or subject reviewers. It would be desirable to include a few Senior Librarians in the pool of institutional reviewers. The pool of subject reviewers could include teachers of library science and senior librarians.

The quality assurance handbook and the other manuals and handbooks that have been developed in the project should be made available in the reference section of all University libraries.

The other activities which complement the review process are development of a credit and qualifications framework, subject benchmarks, codes of practice of academic procedures, and a credit transfer system. These activities are in varying stages of development at present. They are all participatory activities with participation of senior academics under the guidance and administrative support of international consultants.

Sri Lanka Qualification & Credit Framework (SLQCF)

The SLQCF has been completed with development of qualification and credit level descriptors. It provides a structure within which institution can place their awards. It would be imperative for all universities to fit their awards into the framework, at an appropriate level. The courses in library and information science, at certificate, diploma and degree levels will need to be reviewed to see how they fit into the above. If postgraduate course in library science are to be developed they could be better planned within this framework.

Subject Benchmark Statements

Subject benchmark statements which provide an authoritative statement of what is expected of a graduate in a specific subject area have already been developed in respect of sixteen subjects. The subject bench mark statements are expected to guide and promote curriculum development reflect new development in the subject and provide a clear and transparent reference point for external examiners as well as program approval and review. It is expected that all subjects including library and information science would develop subject benchmark statements in due course.

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These benchmark statements should be freely accessible to all stakeholders including students and therefore should be a part of the library collection. It is also contemplated to develop benchmarks in respect of the major service components such as the library and the computer centre.

Academic Procedures Handbook

An academic procedures handbook consisting of codes of practice in assessment of students, career guidance, external assessors, postgraduate research, programme approval monitoring and review, student support and guidance has already been prepared.

It would be useful to develop a similar code of practice for the library and its functions.

Accreditation and Quality Assurance Council

The University Act is being presently amended to include a broader and more effective structural framework for quality assurance and accreditation. This will be in the form of an independent Accreditation and Quality Assurance Council whose primary responsible will be

- To determine minimum standards of higher education institutions in respect of
  - courses of study
  - examinations
  - facilities and equipment

- To assess and monitor educational quality and standards.
- To recommend institutions worthy of accreditation.
- To evaluate foreign degrees/diplomas for recognition

A new Standing Committee on Quality Assurance and Accreditation has been constituted as a precursor to the Quality Assurance & Accreditation Council.

The library community and the Standing Committee on Libraries and Information Sciences (SCOLIS) have to be aware these developments and recognise their role within this framework. The quality of university libraries is an important determinant of the learning environment. It would be the responsibility of the community of university librarians to develop minimum standards, benchmarks and performance indicators in respect of the library, which will assist the Quality Assurance and Accreditation council in its deliberations.

IRQUE (Improving Relevance and Quality of Undergraduate Education) project

IRQUE is a major World Bank project providing complementary funding to the Universities through the UGC. It has two major components viz Institutional Block Grants (IBG) and Quality Enhancement Fund (QEF).

Institutional Block Grant (IBG)

IBG provides funds to all universities on a non-competitive basis in proportion to the number of students enrolled. The areas for which grants could be obtained include improvement in learning environment, information technology, English language competency, social harmony and needs of the disabled. The Universities were expected to submit proposals in respect of each of these activities. Unfortunately the performance of most universities in the IBG programme has been dismal. Only a few have come up with feasible proposals which utilise the full range of funds available. Even the funds granted have been very poorly utilised. Although improvement of the library services could have figured under several of the activities has learning environment, information technology and facilities for disabled, only a few of the proposal submitted were in respect of the library. It is clear that not many librarians have been included in the proposal writing teams. This is unfortunate, as an excellent opportunity for enhancing the quality of our libraries may have been missed. There are exceptions to the above comments and some universities have indeed utilised this grant to improve their library.

Quality Enhancement Fund (QEF)

The second and the far bigger component of IRQUE is the Quality Enhancement Fund (QEF). This has brought in the novel concept of competitive funding into the University system. At present the competitive funding will be complementary to the annual grants provided by UGC.

The programme is open to all study programmes and faculties. The universities have been classified into four tiers for this purpose. The study programme have to submit a comprehensive proposal including a detailed self evaluation, which will be evaluated by a panel of national and international reviewers consisting of senior academics and related professionals who have been specially trained for this purpose. Each study programme could be granted an award of up to 1,000,000 USD over a five-year period.

In this programme too, only a few librarians have been nominated by the universities to be either reviewers or proposal writers. As a result only a few of the twenty-one study programmes that have won this award have included the library as a major component of the proposal. There have been some notable exceptions two of which are briefly described below; with the permission of the proposal writers.

The proposal submitted by the Department of Accountancy at the University of Kelaniya, has provision for a National Online Information and Documentation Centre which will establish links with other universities by forming a library consortium.

The proposal of the Department of Sociology, University of Peradeniya had provision for the compilation of a Sri Lanka Collection of Sociology and Anthropology consisting of microfilms, photographs, films, audio and video recordings and old manuscripts. It also envisaged an electronic database and catalogue, with computer/internet stations, micro-film readers, photocopiers and audio- visual equipment.

Global Connectivity

The Research Promotion Centre of the UGC implemented a special IDRC funded project to promote excellence in research and training through global connectivity. It identified a small number of research intensive study programmes and assisted them to access global information sources and establish a link with centres of excellence abroad. Although it is a pilot programme it has given valuable in sight into information access by academics. An analysis of the research resources accessed show that INASP which presently provides   the free sources has been unable to contribute meaningfully in providing the required material whereas INFOTRIEV which provides it on payment has provided most requests. At present the number of requests being small, obtaining articles on a pay per request basis seems to be of greater cost benefit than widening subscriptions.

National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Recognising the lacunae in postgraduate training and research in the field of humanities and social sciences the Cabinet of Ministries has approved the establishment of a National Centre for Advanced studies in humanities and social sciences. The Standing Committee on Humanities and social sciences has prepared a report on its establishment in October 2004. The development of a library and Information centre within the NCAS has been addressed comprehensively. It has six components.

- Colombo Area Library Information Network, will consist of a computerised catalogue link up of 20 major libraries situated in this the Information Square mile of Colombo stretching from the Museum to the University of Colombo. This will be linked by high-speed Internet access to all other Universities and relevant research institutions.

- International Library Information Network

This would be consist of a similar link with international library networks and specially negotiated linkage with the catalogues of major libraries such as the British Library and the Library of the Congress.

- NCASs own library collection will complement the collection of the other libraries.

- High speed internet purchasing

- Loan collections (personal collections placed on a long term loan basis within the NCAS library).

- Electronic library collection
  A collection of material including specialised encyclopaedias, dictionaries, rare texts, manuscripts, artistic, photographic and film materials available in electronic form.

I have included this proposal in detail as it illustrates the potential for library development that is inherent in all quality oriented academic programmes.

Mission of a University Library/User Expectations

Having considered the on going quality related programmes in the Sri Lankan Universities and critically examining the involvement of the library in them, it would be opportune to consider the mission of a university library and the expectations of its users.

The mission of the University of Sri Jayewardenepura library is to provide access to library and information services in an efficient, effective and useful manner to support teaching, learning and research activities of the intellectual community by making resource materials available and by assisting users to be acquainted with skills in locating information as deemed necessary in the information age. This mission statement could be equally applicable to any University library.

Ajith Khembhavi (2004) has succinctly summarised a library users wish list. Column on the left gives the traditional list and that on the right the added expectations in the modern age.

• Plenty of books and periodicals	• Internet
• Current contents	• Electronic access to journals
• Regular subscriptions	• Abstracting and value adding services
• Good catalogues and records	• Copying and reproducing facilities
• Friendly staff	• Library networks
• Good environment	

The list of indicators used by the National Assessment and Accreditation Council (NAAC) for Higher Education in India, to assess University libraries is given below.

- Advisory committee
- Inter library exchange
- Book bank facility
- Computerization of library services
- Books in the library
- Journal subscriptions
- Ratio of books: students
- Recent acquisition of books and journals (two years)
- Reprographic facilities
- Computer / Internet access
- Audio / video cassettes / microfilm readers
- INFLIBNET / IUC facility
- Working hours.

In Sri Lanka, neither the Quality Assurance Hand book nor the instructions for proposal writers for QEF include such a comprehensive list.

Reasons for 'Cinderella Status'

Though most Sri Lankan University libraries have satisfied these criteria to varying degrees, none would match up to the user expectations completely. I believe that this is due to an under recognition of the potential of the library to enhance academic quality. A critical examination of the reasons for the Cinderella status of the University Library is therefore warranted.

This is essentially a personal viewpoint based on my experience as a senior academic with a direct involvement in many of the quality related programmes mentioned earlier.

The University libraries are chronically under funded. Whenever there is a redistribution in funds, the library vote is the first to get axed.

Low usage by academic staff, especially the seniors is another factor. There are many professors who hardly ever visit the library. This is partly due to the availability of direct Internet access. This has resulted in superficial scholarship among both students and academics. Cut and paste*f* reviews are common place. Some review references are based on reading the abstract only.

Non-recognition of the library as an academic resource is widespread. Librarians are not seen as academics. They are rarely used in teaching learning activities. They are

not invited to Faculty Boards or academic committees. That is the reason why hardly any have been proposal writers for the IRQUE.

Although IT development has been given prominence, it has been inadequately linked to library development. In most universities, IT development is planned by computer professionals and academics based in the computer centres with little participation of the librarians.

There is inadequate inter library cooperation. This is especially true of fields such as arts & humanities. It would be desirable to have the equivalent of the HELLIS network for medical libraries in all the disciplines.

There is a conflict of interest between the central library and departmental or faculty based libraries, which has an adverse impact on library development. There is no policy for prioritisation.

Failure to transfer the relevant local information, such as conference reports, local journals, dissertations and old manuscripts into the digital (electronic) form has been a major factor in reducing the relevance of the modern library to the average user.

Lack of awareness about innovative programmes amongst the library community it self has also contributed to this situation.

The way ahead for University Libraries

There has to be increased funding for library development. If the IBG could be revived with library development as a specific activity it would be beneficial.

There has to be greater interaction between IT development and the library. All locally available information sources need to be digitised.

There has be a change of attitude amongst academic community. The library and the librarian need to be recognised as a valuable academic resource with greater involvement in teaching learning activities and academic decision making bodies.

Although there may be exceptions, as a policy it would be desirable to concentrate on the development of one central library with small departmental collections for the use of academics.

As a priority we need to develop a code of practice for library functions, a benchmark for library services, and performance indicators for review of libraries.

Greater inter library cooperation with formation of library consortia especially for electronic information sharing is a move the right direction. It is heartening to note that the first step has already been taken. The feasibility of Sri Lanka linking with INFLIBNET (India) needs to be explored.

User awareness programmes need to be strengthened and directed to a wider audience including all new undergraduates.

Developing more undergraduate and postgraduate courses in library science would help to increase the critical mass of well trained librarians which is needed for all the activities mentioned above.

This is a brief summary of the desirable moves for improving the present status of the Sri Lankan University Library.

Conclusion

This paper has two objectives. The first is to make the community of university librarians familiar with the on going quality enhancement initiatives within the university system so that they can be pro-actively involved.

The second is to alert the university academics and administrators to the marginalisation of the library in quality initiatives, with a view to jolting them in to remedial action.

I cannot see that lectures can do as much good as reading the books from which lectures are taken*f*. Samuel Johnson, Lexicographer.

There are two forms of knowledge. Knowledge one keeps in the head and knowledge of where to get knowledge when needed.*f* Noah Webster, Lexicographer.

These two quotations reflect the view I have had as a student and later as an academic about libraries. I have no doubt that many of my academic colleagues share this view. It is our duty to revive and protect the role of the University library as an academic resource.

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E-access to local information: institutional and journal repositories

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Abstract

The basis of scholarly publishing has changed little since the first journal was published several centuries ago: the reasons why authors publish remain the same, and peer review continues to be used to maintain editorial quality standards. However, recent technological changes have revolutionised the manner in which the objectives of authors, publishers and information providers can be met. The introduction of online institutional, subject-based and journal repositories offer opportunities for all people involved in information creation, collection, distribution and discovery. A contributing factor to the need for electronic collation of research is the rapid growth of information and the increasing globalisation of research. This has led to the development of e-repositories to facilitate easier discovery of content by researchers, and allow libraries to fulfil their role as archives of knowledge for their communities. This paper argues it is vital that locally-produced content is enabled to make use of these new technologies, so that indigenous knowledge is not only made available within the local community and is retained for future generations, but that it also manages to compete with international content which already makes sophisticated use of these new technologies.

Introduction - publishing drivers

It is expected that the results of research will distributed, and formal publication via either a learned journal or a scholarly book have been the accepted methodologies for several centuries. During the last two decades there has been increasing pressure on academic and research staff to publish greater numbers of articles: for their career, their promotional prospects and to secure future funding for themselves and their institution. It is now common for a single piece of research to produce several articles/publications, whereas previously only one had been forthcoming. The speed of publication has also become an increasingly important criterion, with faster dissemination expected by funders and promotional boards.

In the last decade online publishing has become a *de facto* norm for western scholarly publications. This has arisen from the potential speed and wide distribution offered by online publication. As researchers have become more used to online content there have been increasing expectations, including an expectation that archive content will be made available online.

However these changes have not led to the demise of printed information (although in the early 1990s this was predicted as an inevitable result of the Internet), and print publication is still regarded by many as the more secure way of archiving material.

Globalisation of information – fact or fiction

One overwhelming argument for placing research online is the resulting globalisation of information: the ability to reach all researchers, anywhere in the world. However, this apparent benefit is mediated by the growth in research information, and the inequable abilities of online publication to move across what has been called the *digital divide*. The growth of published research has been estimated to be in the region of 5% annually (Davies, 2004), and another estimate states "It has taken 30,000 years for humans to accumulate 12 exabytes of information: it will take just 2-5 more years for humans to accumulate the next 12 exabytes" (Anon, 2000 ˇ a representative from a data storage firm in the USA quoted in *Computer Today, 2000)*. However this growth of online information has been mostly driven by the West, in particular the USA and Europe, and there is a lack of representation of content from other parts of the world, or in other languages. Recently this has led 19 European national libraries to join together in a multimillion Euro initiative to put 15 million (non-English) . works of European literature online (see www.dw-world.de/w/article/0,1564,1566717,00.htm)

Back in 2002, Andrew Odlyzko stated "in this new electronic age, if it isn't on-line, for many purposes it might as well not exist*f* (Odlyzko, 2002), and although this statement may be somewhat provocative it does highlight a growing problem for publications that do not have an online presence: if researchers assume they will find all they need online, then they will cease to consider print-only publications, thus making them less visible and less relevant over time.

Visibility of Sri Lankan research

Investigating publications with direct relevance to Sri Lanka, I undertook three investigations:
1. To see how many journals published in Sri Lanka were indexed within *Web of Science* databases, and to compare this with the number registered with the international ISSN agency.
2. To see how many articles authored by one or more authors based in Sri Lanka were included within these databases (regardless of where they had been published).
3. To see how many results the key word "Sri Lanka" found on two scholarly search engines: Google scholar and Scirus.

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The first result was rather disappointing. A total of 1,123 publications are listed with the International ISSN agency (http://www.issn.org) as of 10 May 2005. However of these a large number are annual reports, newsletters, and other publications that will not contain original research. It may be assumed that at least 50% of the items do represent scholarly publications, and not all will still be publishing. However, against this number not one was included within the main citation index, *Web of Science* (which includes Current Contents, and the citation indexes used widely within the West to determine the most reputable publications).

Following from these investigations, some of the major indexing databases were searched to see how many articles they included with one or more author with a Sri Lankan affiliation. The results from this investigation are represented below.

Index	URL	Sri Lanka
Arts & Humanities Citation Index	http://isiwebofknowledge.com/	113
CAB Abstracts	www.cabi.org	5058
INSPEC	www.iee.org/Publish/INSPEC/	522
Medline	www.ncbi.nlm.nih.gov/entrez/query.fcgi	1099
PsycInfo	www.apa.org/psycinfo/	108
Science citation Index Expanded	http://isiwebofknowledge.com/	4336
Social Sciences Citation Index	http://isiwebofknowledge.com/	569
Zoological record	www.biosis.org/products/zr/	425

Lastly I searched for "Sri Lanka" within the title of articles indexed by Google Scholar and Scirus. Google Scholar is a relatively new development of Google, and has been developed to provide a more focussed search for researchers. It claims to index only scholarly information, and therefore to provide more accurate results. Scirus is a product of the publisher, Elsevier Science, and also searches the web with a filter to identify only scholarly publications. Both services have severe limitations in coverage, but provide some interesting comparative data for the above figures

- 58,400 hits on Google Scholar - www.scholar.google.com
- 12,087 journal article entries on www.scirus.com

However, from the first few pages of these results they all appeared to come from western, international publications, and not from local or regional publications.

Capturing contents – different methodologies

Research content has traditionally been captured in various formats, the most important being journal and book articles, unpublished theses, and working papers.

The role of librarians has always included the capturing, indexing and archiving of such materials produced, but this role is compromised when publications are unobtainable (within access-controlled publications or print publications not lodged within the library), or are unreliable ˇ in particular online publications that are not on reputable sites, and are likely to disappear with no archive files retained.

Online access to research may have facilitated discovery, but the intransience of web pages is of growing concern. Research undertaken on scholarly journals found that internet references given in articles became increasingly unobtainable/inactive with time: the research found that within 3 months of publication, 2.8% were inactive, and that this grew to 13% after 27 months (Dellavalle et al, 2003).

To attempt to answer these concerns, some new initiatives have been developed, mostly using technology to resolve the issues of archiving and access. For example, many publishers now promise permanent access to purchasers of their online content ˇ providing this through a variety of methods including depositing their content in larger "repositories" ˇ for example the British Library in the UK. Technologies such as LOCKKS (Lots of Copies Keep Stuff safe) provide libraries with the ability to "cache" and store publications they have bought, with a built-in methodology for ensuring multiple copies to avoid problems with corrupt files (and they ensure compliance with copyright legislation).
(see http://lockss.stanford.edu/projectdescfaq.htm)

Institutional repositories (IRs) – what they are

Coincidentally with the above issues there has been concern from academic institutions that they are "losing" their intellectual content ˇ by allowing their staff to publish the results of their research with commercial publishers, and which the institution then needs to buy-back if they wish to obtain access. This has also coincided with concern from some of the major research funding bodies that the results of research they have funded is not made publicly available, thus contravening the spirit of their support.

The answer to these concerns has been the growth of Institutional Repositories. They are best described as "a digital collection that preserves and provides access to the intellectual output of an institution" (Crow, 2002), are usually online, and are comprised of articles, theses, working papers, databases, and other content as required within each institution. Although they are not proposed as a competitor to formal publishing, they operate in parallel with traditional publishing models, with the aim that articles are not only published within relevant journals and books, but they are also deposited with the IR, thus ensuring that they are archived within the institution, and made available within the institution without the need to buy-back the articles from commercial publishers.

IRs the benefits and disadvantages
The concept of an IR is certainly very attractive to many institutions worldwide, however the complexity of implementation and the need for investment and long-term commitment frequently prevent them becoming a reality. Fortunately the

development of these proposals has come at a time of growing *Open source* developments, and much of the software required to set up and manage an IR is freely available (assuming that the owning institution has the required technical expertise to use the software and build the repositories that they require). There are currently over 400 IRs worldwide and there is an active community of developers and users providing support and problem-solving answers to users anywhere in the world. As would be expected, the largest number of IRs are in the USA (127) and the next country with the greatest number is the UK (54). Although there are several softwares available, the three most commonly-known are E-prints, D-space and Greenstone. E-prints has been developed by the University of Southampton in the UK with funding from JISC, the government body behind technical developments for the academic community within the UK. They are also in the process of developing a model where they can provide different levels of support for new IRs, from total building, development, maintenance and hosting, to a simple community and helpdesk support.

The Open Society Institute (OSI) have produced a paper comparing the different systems, which is available free on their website:
< http://www.soros.org/openaccess/software/>.

The largest problem currently experienced within institutions that have an IR in place is the lack of commitment from within the academic community, and the lack of awareness of the importance of capturing and archiving content. The main driver for all academics and researchers to produce written works is for the purposes of career enhancement, which currently comes from publication in reputable journals and other publications. Therefore there is a lack of rationale for them to make the effort required to post their articles in an IR unless there is a mandate for them to do so. Several universities are therefore considering mandating that content is deposited, and also under consideration is using input into IRs as part of career evaluation.

In parallel with this, several of the large funders have set up their own repositories, and are beginning to mandate that funded research is posted within them. For example, in a recent act of legislation, the US government has stipulated that research funded through the National Institutes of Health (NIH) should be lodged with PubMed Central, a biomedical full text database, within 12 months' of publication. <http://www.pubmedcentral.nih.gov/>. Also the Wellcome Trust is in the process of setting up its own repository, and will mandate all funded research to be deposited there <www.welcome.ac.uk/doc_WTX025197.html>.

An answer to Sri Lanka?

The traditional publishing models are well established, and still provide excellent information-gathering, quality control, and dissemination functions: however in order to capture information and ensure its availability for future generations ˜ and also to ensure visibility within the world research community ˜ more organised methods of data capture need to be considered, and institutional repositories may be a means of undertaking this.

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