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Impact of information communication technology on LIS education in India: Problems and futuristic perspectives

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Abstract

Adequacy of infrastructural facilities is one of the important elements for offering qualitative teaching, learning & research. The infrastructure includes the teaching and other non-teaching staff and laboratory equipments. It is noticed that except few university departments, the majority of the departments do not have the proper infrastructure facilities. The teaching departments are suffering from the minimum staff having the latest knowledge of ICT although many developments are occurring in this field. At the same time, the laboratories attached to the teaching departments have inadequate number of computer and other equipments to train the library professionals. The UGC is also in its stride to having comprehensive and proper training facilities for the in-service training for the LIS teachers. In this paper highlight's impacts of ICT on various components of LIS education, teaching, learning, research and also focus the problems, future perspectives of LIS education of India.

Keywords: ICT, LIS education, LIS research, Teaching, Virtual Learning, Knowledge commission

1. Introduction

Information and communication technologies (ICTs) which include radio and television, as well as newer digital technologies such as computers and the Internet have been touted as potentially powerful enabling tools for educational change and reform. When used appropriately, different ICTs are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life. However, the experience of introducing different ICTs in the classroom and other educational settings all over the world over the past several decades suggests that the full realization of the potential educational benefits of ICTs is not automatic, Blurton, C (1999) [2]. The effective integration of ICTs into the educational system is a complex, multifaceted process that involves not just technology indeed, given enough initial capital, getting the technology is the easiest part, but also curriculum and pedagogy, institutional readiness, teacher competencies, and long-term financing, among others, as 'Basic Education for All' 'Core Work Skills for All' and 'Lifelong Learning for All'.

In India a major changes as regards to LIS profession is seen only in last few years. India is having a remarkable place in the world as regards to its history of highly developed civilization and culture. In the fast changing world of the 21st century, several professions are adapting with changes and pacing with new useful technologies for their survival and advancement. In this century creation of new knowledge, capturing of new ideals promptly and their timely application is crucial for success in any endeavor. Concerns over educational relevance and quality coexist with the imperative of expanding educational opportunities to those made most vulnerable by globalization developing countries in general; low-income groups, girls and women, and low-skilled workers in particular. Global changes also put pressure on all groups to constantly acquire and apply new skills. The International Labour Organization defines the requirements for education and training in the new global economy simply, ILO (2003) [1].

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2. Impact of ICT on LIS Education

During the last few years, it seems in India a major changes as regards to LIS profession and professionals. India is a significant place in the world as regards to its history of vastly developed civilization and culture and way of life. But, in current years, India is having all types of libraries, which are located at the well-known places of learning. They include State Central libraries, Regional libraries, Oriental Manuscript libraries, and libraries attached to educational institutions, Research centers, Religious/Cultural organizations, Learned Societies and libraries managed by private organizations, Velmurugan & Kannan (2011) [3]. LIS curricula need to consolidate ICT concepts, knowledge, skills and proficiency into core competencies, and LIS schools need to provide adequate content and practice that will enable LIS graduates to adopt and use of ICT application in effective manner. The use of electronic resources in teaching and learning positively impacts the delivery of LIS modules. Some of the new approaches, methods, techniques and instructional resources/tools of teaching/learning, when innovatively used, not only make it easier for students to learn. But also insidiously acquaints students with the ICT tools. LIS researcher along with depending on print sources also refers a lot of E-resources due to various advantages of e-resources. Libraries also have started depending on and providing ICT based information services along with traditional services. However, the significance or magnitude of these issues and challenges vary between countries and institutions, presumably due to socio-political and economic environments.

The IT revolution of 1990s had major impact in the syllabus of BLIS/MLIS level courses of all the universities in India UGC and various State Universities also changed the NET & SET syllabi for library and Information Science subject and the major changes were made in 2000s. The components of ICT those were included in BLIS/MLIS/SET/ level are-

- ICT-Components and impact on society.
- Computer- Components and Impact on Libraries, Operating Systems.
- Network & Networking, ISDN, OSI.
- Library Automation, bar coding technology.
- Internet, Search Engines, DOI, OSS, Institutional Repositories.
- National & International Information Systems- NISSAT, NASSDOC, NISCAIR, DESIDOC, MEDLARS etc.
- Telecommunication Technology.
- Types of e-Resources.
- Web 2.0, Semantic Web, Website development.

According to CISCO's definition quoted by Jeevan e-learning is over searching umbrella that encompasses education, information, communication and training. It is the web enabled system that makes information and knowledge to those who need it; they need it-anytime, anywhere.

3. Impact of ICT on Learning

The ICT revolution is a revolution in learning, it also has transformed available technologies, the means and methods of studying, the modalities of school operations, the manner of investment and expenditure of resources, and the very

way we think about what education could be and should do. The advent of the Internet and the Web, these opportunities have expanded vastly, and educational institutions have made more and more varied use of them. Course material is posted on the Web, assignments can be communicated through the net, and teachers can be accessed around the clock by the new modes of transmission, Gudmund Hernes, (2002) [4]. The new education programs have reached out to off-campus students, often from long distances, but they also have reached in to regular students in novel ways by providing learning materials in new forms. They include a wide spectrum, from French grammar to fractal geometry, from guides to trilobites to flash cards for physics.

The Internet also changes the ways schools work by making possible closer cooperation and interaction among them, within the same country and across continents and oceans. ICT has become a medium in the original sense of the word: something in the middle, between the substance to be learned and the student who is to master it. First, it liberates provision of education from the constraints of time and place: many courses can be accessed from more or less anywhere and at any time. Second, training can be customized, by allowing material to be adapted to individual levels and tasks to be paced according to personal progress. Students can link to other students, across boundaries and across continents through presently available technological tools such as social and multi-media. Children can take part in the development of learning materials for each other in other classrooms or countries. Teachers in the remotest places can be encouraged to take part in important professional development projects. Indeed, the whole education system can work like a neural network, where cells with synapses to other cells can fire them up.

3.1. Virtual Learning Environment (VLE)

The 'virtual learning' term is contains the online learning services and also called learning platform that organizes and provides access to online learning services for the students, teachers and administrators, Ibohal & Madhuri, (2009) [6]. These services include access control, provision of learning content, e-learning tools and administration of user groups. In much literature, different terminologies have been used for the term 'virtual learning' as:

1. Internet learning.
2. Distributed learning.
3. Network learning.
4. Online learning.
5. Tele learning.
6. E-learning.
7. Computer assisted learning.
8. Distance learning.
9. Web-based learning.
10. Federated learning.

These terms have given us an indication that in virtual learning, the learner is at a far off place from the tutor or teacher or instructor; uses some form of technology (obviously internet connected computer) to access the learning resource materials which are web-based; and also interacts with the teacher/tutor or instructor and other learners; is provided with some form of support to meet his/her needs.

4. Impact of ICT in Teaching and Training

Teaching at LIS School as well as Higher Education, mostly, concentrates on giving information which is not the sole objective of Teaching. Along with giving information, the other objectives are:

- Developing understanding and application of the concepts.
- Developing expression power.
- Developing reasoning and thinking power.
- Development of judgment and decision making ability.
- Improving comprehension, speed and vocabulary.
- Developing self-concept and value clarification.
- Developing proper study habits.
- Developing tolerance and ambiguity, risk taking capacity, scientific temper, etc.

With the present infrastructure, class size, availability of teachers, quality of teachers, training of teachers, etc., it is difficult to achieve all the objectives. Further, most of the teachers use lecture method which does not have potentiality of achieving majority of above mentioned objectives. The objectives are multi-dimensional in nature, so for their achievement multiple methods should be used in an integrated fashion at present ICT may be of some use, Sansanwal (2009) ^[7]. It is a well known fact that not a single teacher is capable of giving up to date and complete information in his own subject. The ICT can fill this gap because it can provide access to different sources of information. It will provide correct information as comprehensive as possible in different formats with different examples. ICT provides online interaction facility. Students and teachers can exchange their ideas and views, and get clarification on any topic from different experts, practitioners, etc. It helps learners to broaden the information base. ICT provides variety in the presentation of content which helps learners in concentration, better understanding, and long retention of information which is not possible otherwise. The learners can get opportunity to work on any live project with learners and experts from other countries. The super highway and cyber space also help in qualitative improvement of Teaching – Learning Process. ICT provides flexibility to learners which are denied by the traditional process and method. Flexibility is a must for mastery learning and quality learning.

5. Impact of ICT on LIS Research

Research is the basis of better understanding and the development of the sector research plays an important role in planning for the future of the domain, for example, in identify funding needs: planning for the future structure of LIS provision: helping to decide priorities: and identifying where funds should be concentrated. Prior to 1960s, analysis of data collected in large scale, ambitious research projects took weeks or even months for completion. The advent of computer and its high-speed of working allow the same analysis to perform in minutes or even seconds. In present era, the research worker needs to know, how to communicate the date to the computer properly and how to select a relevant technique of statistical analysis.

Statistical Packages like Statistical Package for Social Sciences (SPSS), Biomedical Statistical Package (BMD or BMDP). Comprehensive Meta Analysis (CMA), AcaSate, EViews, SciPy etc, ate some of the Statistical Packages that are specialized for Statistical analysis. It enables people to

obtain the result of standard statistical procedure and statistical tests, without requiring low-level numerical programming. Most statistical packages also provide facilities for data management. The introduction of Internet in late 1960s brought yet another revolution. Internet with its various feature brought Information Explosion in all the subject areas. Some of ICT impact factors are.

- Researcher now sitting at one place in the globe can access to any required literature any time, anywhere and in any form that he/she desires. All types of documents viz. Books, journals, encyclopedias, dictionaries, indexing and abstracting services, theses, dissertations, conference proceedings, patents, standards etc. are now available in electronic format in internet. These can be accessed either freely or through subscription. Considering the increasing access of freely available e-resources by researchers, general users, various, peer-reviewed e-journal are also kept under open access ex., Open J-Gate, Dlib, DOAJ etc.
- Abstracting Services like LISA, Scholarly database like Emerald, EBSCO and ERIC can be accessed online by subscribing to the database. Also retrospective issues can be accessed.
- Institutional Repositories provide opportunity for researcher to access journals, published and unpublished research work, theses and dissertations of various universities and Institutes with some of them being open access, example is Vidyanidhi Digital Library Mahathmm Gandhi University etc for Theses database and NISCAIR online periodicals, INFLIBNET@DSpace etc for Scholarly published works are providing based on free access to any one.
- Citation management software allows the researcher or author to manage the reference and create bibliographies and in-text citations.
- Zotero is a powerful, easy-to-use research tool that gathers, organizes, and analyzes sources and then shares the results of research.

According to McNikol & Nankivell (2002) ^[5] the main themes of planned research projects in the electronic era are:

- **Electronic information Examples:** Women and technology; Provision of electronic resources in developing countries; Natural language processing, Development of digital/electronic resources Impact of digital resources on information seeking behavior, Interoperability and digitization, Subject searching in distributed environments.
- **Information policy Examples:** Information policy/public library policy; Information policy and ICTs; Multimedia information policy.
- **Education Examples:** Use of the Internet for information finding purposes in secondary schools; The library and information needs of work based learners; Continuation of action research into the teaching and learning of information handling skills.
- **Business information Examples:** Role of information professional as business facilitator; Knowledge management (especially in business).
- **User focused IT projects** e.g. E-tourism, e-learning, e-government.
- **Role of ICT networks;** community building; social inclusion.
- Semantic web and controlled terminologies.

6. Problems of LIS Education

LIS Professionals have to face many challenges to meet the present and future generations and prospects of Library and Information Science to bring the quality education and practice.

- Most of the open universities have limitless intake of students; as a consequence, qualitative students are not coming out from these universities.
- In addition, notwithstanding having higher degrees with good percentage, they are ineffective and unproductive in the field of professional

Following points are other biggest challenges and issues that the LIS education system is facing by in this present context:

- Lack of Admission procedure
- Lack of finance policy
- Inadequate Infrastructures
- Inadequate of Knowledge and Training
- LIS course duration, curricula
- Insufficient Contact Classes
- Absence of Accreditation
- Lack of supporting policy
- Lack of a global Perspective
- Lack of Library Visit
- Lack of Permanent Faculty for Distance Program
- Lack of Evaluation & Medium of instruction

6.1. Other problematic issues

- The challenge for the information professionals is to persistently learn, incessantly upgrade their competencies and skills to quickly step into new roles created by the service gaps in the growing knowledge intensive society.
- Being small, the LIS schools in India are not enjoying the professional status on a par with other subjects like computer engineering or business administration.
- LIS faculty is usually overstressed with several responsibilities such as teaching, research, administration, evaluation, and many other academic assignments such as curriculum development, infusion of relevant ICTs, and integration of new ideas into the LIS programs. But faculty is the first pillar of excellence and there should be no compromise in recruiting and retaining competent and committed faculty.
- LIS schools in India are facing uncertainties because of technological advances on the one hand, and lingering issues affecting the LIS schools and their programs on the other hand.
- Unplanned expansion of LIS schools and lack of professional accreditation are the major reasons for lack of quality education, research and training.
- No LIS school in India is running any program that may prepare the LIS professionals for organizing information literacy courses regularly. Otherwise also the quality of LIS research in India is not up to the mark.
- The ongoing advances in ICTs and emergence of new state-of-the-art knowledge management tools pose challenges not only to library and information professionals and LIS educators, but also to the LIS profession as a whole.

- Most of the LIS departments do not have minimum qualified IT oriented faculties with some exceptions and also do not have sufficient number of equipments to teach the practical for the subjects.
- The faculty improvement programme is not so strong and effective because of shortage of manpower and budgetary provision at the individual university/college level.
- Rise in the number of LIS departments both in distance and regular modes without considering quality of the products, the job opportunities and infrastructure availability.
- The crucial issues related to the position and function of library and information science professionals for the scientists who are directly connected to the Internet resources and full text database services. It seems that for collecting information they do not need at all the help of any library professionals.
- Different type of employment opportunities, which are coming up for LIS graduates due to the technological changes. For example, web content manager, metadata creators, electronic publishers, etc.
- Survival of LIS profession in India in an ethical manner.

The biggest challenge for the LIS education providers in India is how to eliminate the shadow of gap between theory and practice on the one hand, and between push and pull technology on the other.

7. Futuristic Prospective of LIS Education in India

In the fast changing world of the 21st century, several professions are adapting with changes and pacing with new useful technologies for their survival and advancement. In India a major changes as regards to LIS profession is seen only in last few years and LIS Department and Faculties want to effectively utilize availability of limited resources and try implementation of those are programs in LIS Schools, they are.

- Modern LIS education requires infrastructure such as media labs, IT labs, and information products for practical approaches.
- Libraries and information centres are increasingly organizing their work around newly emerging technologies and tools.
- Information professionals is changing and expanding and their existing skill sets and competencies are becoming obsolete, LIS schools are required to constantly take notice of the skill sets and new competencies that are in demand in the market place and accordingly create new wherewithal and conform their curricula to meet the requirements of present times and times ahead.
- In smart class rooms having interactive board and connectivity with the intranet, faculty can select electronic content to help the students in just-in-time learning.
- The LIS schools must initiate research-based teaching and ensure more emphasis on training keeping in view the vast potential of info-business.
- The library schools have opportunities to enormously expand their educational programs and play a proactive role in preparing human resources for managing knowledge resources for the society at large.

- LIS schools are required to enormously expand their curricula and offer specialized courses in areas such as social informatics, business informatics, financial informatics, agricultural informatics, health informatics, and legal informatics and so on.
- Library schools also have tremendous opportunities to prepare information professionals to step into new roles such as knowledge engineers, information architects, information analysts, hypermedia specialists, and decision support specialists.
- LIS schools to provide training to manpower in the newly emerging areas such as information aggregation, institutional repositories, digital and virtual libraries, open sources, information products and services design.
- LIS schools should also develop a body of knowledge that creates substantial demand in the market place and fetch high salaries for graduates.
- “The real world is 75 percent extroverted and 25 percent introverted and librarianship is 75 percent introverted and 25 percent extroverted according to most of the studies. So having people who are uncomfortable getting out with people and discussing what they do and being confident about it is problematic for the profession as a whole” (Stephen, 2008, pp. 18-19). LIS students do not open their mouth in the classrooms. Group discussions can make them more open and confident. Therefore innovative teaching methods must be used to involve students in the process of teaching and learning.
- A growing number of LIS departments are developing their own websites to provide information about them. With the growing impact of the Internet on LIS, new areas such as digital libraries, electronic publishing, online resources, metadata and information architecture are reckoning as nascent fields of LIS research
- The beginning of PG Diploma courses in some specialized areas, like Archival and Documentation Management, Library Automation, Networking and Information Technology, etc.
- On internet many websites are available freely which may be utilized by teachers, researcher & students for understanding different concepts, improving vocabulary, developing Reasoning & Thinking, etc. ICT can help in preparing students for Scholastic Aptitude Test (SAT), Graduate Record Examination (GRE) Test of English as a Foreign Language (TOEFL), etc.
- Making provision of modular courses for the new developments in the field.
- Giving more importance in deciding the research topics which should be related to the current issues such as “Need of LIS professionals in electronic environment, etc”.

8. Indian Initiatives to development of LIS Education

In India most of Library Associations, Professional Associations, State as well as Central Government body's are engage in to improvement of education systems in India, in various level, its including LIS education system also, some of well known associations, centers are in that way, there are,

- The role of professional associations in India in the promotion of the LIS education and its systematic development has also been noteworthy. The

professional associations, the Indian Library Association (ILA), the Indian Association of Special Libraries and Information Centres (IASLIC), and the Indian Association of Teachers of Library and Information Science (IATLIS) have been holding annual conferences at the national and international levels to take stock of manpower needs and supply of qualified manpower from the departments.

- Two unique courses were developed by the Documentation Research and Training Centre (DRTC) and the Indian National Science and Documentation Centre (INSDOC) to cater to the needs of special libraries in particular. However, the inculcation of the graduates from these institutions in teaching programmes has given a new direction to the educational paradigm of LIS. While DRTC is an autonomous central institute under the Indian Statistical Institute, INSDOC is a constituent centre of the Council of Scientific and Industrial Research. The National Centre for Science Information is also offering a postmasters degree course with intensive application of IT to LIS.
- The National Information System in Science and Technology/Department of Scientific and Industrial Research (NISSAT/DSIR) and other research and development organizations like Defense Scientific Information and Documentation Centre (DESIDOC) and Sectoral Information Centres under NISSAT have also contributed to this process of technology application in libraries and the manpower development to man many of these libraries and information centres (LIS Education).
- Today with the ascent of the ICTs and the Internet, collaboration is not a difficult thing. In Europe, there are joint degree programs being offered. This is a very good trend for flexibility and recognition of degrees at global level. “Recently, a new LIS Education in Developing Countries Discussion Group was established in the International Federation of Library Associations (IFLA; <http://www.ifla.org/VII/dg/lisdg/index.htm>). Activities of the discussion group include: curriculum development for LIS Schools in Developing Countries; exchange of expertise and experience; design policy and procedures for assessment and accreditation/certification; organizing workshops, conferences, seminars, etc., and promoting R&D activities”. But the problem is that not much interest is shown by the stakeholders this Discussion Group.
- Promotion of distance education is another area where internationalization of LIS education can be promoted. India, since last 25 years, has been imparting distance education programme is LIS, particularly through the Indra Ghandhi National Open University (IGNOU). The IGNOU over the years has achieved substantial experience in this area, has created excellent course material using nation's best subject experts to write the lessons, and has also broadcasted the lessons through its national television network. Like India, many other developing countries such as Ghana have been utilizing ICT for distance education programmes, Martey (2004).
- The National Accreditation and Assessment Council (NAAC) under UGC have provided enough impetus towards creating good infrastructure, for both libraries

and teaching departments. The faculty to teach the traditional and IT related subjects is also available in good number as is evidenced by the large number of conferences, workshops and refresher courses organized by several professional bodies and the Academic Staff Colleges.

- The Inter University Board of India was formed on 23 March 1925 with a view to promote inter-university cooperation and interaction. In 1943, the Inter-University Board of India resolved that, “in order to maintain uniformity of standards at various centres for training for librarianship, it is necessary that only graduates be admitted to the diploma course”. It became necessary as the Board dealt with the issue of equivalence of degrees awarded by foreign and Indian universities. The Board adopted a new name, Association of Indian Universities, in 1973 and is still very active.
- The Ministry of Education, Government of India set up a nine member committee under the Chairmanship of Shri K.P. Sinha to recommend the future library structure and its development in India. The Committee recommended to the Government of India to set up an expert committee to suggest complete reorganization of the syllabus, teaching methods and conduct of examination of the then prevailing library diploma course. It recommended that UGC should provide financial assistance to universities offering diploma courses for establishment of full teaching departments. It also recommended that the terms and conditions of work of library science teachers should be same as those of other departments.
- In October 1985, the Government of India set up a Committee on National Policy on Library and Information System (CONPOLIS) under the Chairmanship of Prof. D.P. Chattopadhyaya, recommended that IT should be used as a tool for maintenance of standards in LIS education. Professional development activities are strengthened in a systematic way. An accreditation agency for LIS courses was suggested to check falling standards due to proliferation of schools. It was also suggested to establish a National Centre for Higher Education and Research in LIS.
- The UGC efforts in the development of LIS education are well evidenced by the three committees that were constituted to formulate model curriculum and pedagogic guidelines for the LIS courses in India. The Ranganathan reports on University and College Libraries and Library Science Education were the first landmarks in this regard. Later, report of the Kaula Committee on Curriculum Development in LIS Education was published in 1992. The impacts of these efforts were first seen in the continuous development of the curriculum with changing times. Second, the UGC recognized LIS as a discipline on par with other pure and applied subjects. Third was the growth of teaching departments in various universities. And finally, it also necessitated the need for qualified personnel to teach the subject, which gave impetus to start the masters and research degrees programmes.

9. Recommendation of National Knowledge Commission (NKC)

National Knowledge Commission, Velmurugan & Kannan (2011) ^[8], set up by the Government of India, has

recommended certain measures for the overall development of LIS education in the country. These are:

- National Mission on Libraries should be set up immediately, for a period of three years. The Mission should subsequently be converted into a Permanent Commission.
- Revamp LIS education, training and research facilities.
- Establishing a well-equipped institute for advanced training and research in library and information science and services would provide the necessary impetus to this task.
- A system should be set up to foster close cooperation between the teaching/faculty and practicing librarians at all academic and research institutions.
- The minimum staffing pattern for the BLIS course and the MLIS has been recommended and there should be a 1:10 teacher-student ratio.
- All departments of LIS should set up computer departmental libraries with appropriate teaching tools.
- Appropriate physical facilities such as classrooms, must be made available to each LIS Department and E-learning materials for upgrading the skills of the existing staff should be provided.
- Teachers who will teach in areas such as ICT applications in libraries and other modern methods should have a specialization in these areas. A system must be set up to allow stringent review of the performance of teachers. A suitable system of rewards, including promotions, should be instituted.

10. Conclusion

In the knowledge society mouse is more powerful than the pen. Technology enabled constant connectivity has helped in generation and use of more information and production and distribution of knowledge. The information networks provide most democratic access to information resources at any time and any place, thus accessing relevant information and its strategic use at a faster speed has become important. Changed role of LIS professional from “intermediary to facilitator”, new tools for dissemination of information, shift from physical to virtual services environment and extinction of some conventional information services and emergence of new and innovative web based LIS education in India.

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