Submitted on: 1/08/2014

Attaining Information Literacy: An assessment of Indian Agricultural Universities approach to enhancing Student's Information and Research skills

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Abstract

Information Literacy is receiving increasing attention among Indian professional practice with emergence of electronic resources and digitization activities in libraries. As early as 1970's User instruction existed in Indian agricultural universities and were adapted from US land Grant pattern universities. Formally popularly known as User education, most universities had an embedded curriculum approach to enhance students information and research skills . This study investigates and analyses what agricultural universities are offering to enhance their students library or information skills. In addition, identifies basic contents in terms of latest developments, library skills and research skills, approach to uniformity, concept like subject librarian.Findings reveal that out of 34 universities surveyed , significantly high more than 90.0 % offer credit bearing information literacy through curriculum approach by different names, to mention a few like Research Methodology and Library Use, Technical writing and User Education, Storage and Retrieval of Scientific Information, Agricultural Information system etc. Most state universities provide such course to Graduate students and are yet to introduce structured courses for under graduates. In the year 2010 the Indian Council of Agricultural Research formulated Common Academic Regulations (CAR) and introduced a mandatory IL course entitled Library and Information Services coded PGS-501 for Post Graduate Studies. Some 20% state universities have now introduced IL as essential part of curricula after CAR. The study also points out the need for innovative perspective in mode of delivering educational content engaging greater online or e- learning experiences.

Introduction

Information Literacy has been a subject of discussion in educational circles worldwide and continues to be an important skill for students in higher education. Researches in the resent past indicates diverse understanding of information literacy in higher education for example ALA states set of abilities requiring individuals to recognize when information is needed and have ability to locate , evaluate and use effectively the needed information . ACRL (2000) states in their information literacy competency standing for higher education that developing lifelong learners is central to the mission of higher education.

In Indian higher education system for Agricultural and allied sciences, User education existed from as early as 1970's through integrated course curriculums. These courses in Agricultural universities of India had its beginning from on the pattern of land grant colleges of American universities. The US land grant universities assisted India in generation of new technologies that led green revolution in 1960s and many state agriculture universities such as G B Pant University of Agriculture and Technology, Punjab Agriculture university and others were modeled after the US system. SPAN (2007). Indian agricultural universities having roots from these colleges accepted the land grant pattern of imparting education with trinity of functions of teaching, research and extension establishing relationship between agricultural colleges, research departments and extension services .

Post independence when the country was short of food grains and required food security the existing Agricultural education and research had to be reorganized to meet the need of economic progress and change. Randhwa (1968) The focus was on delivering best agricultural education and to develop high yielding varieties to usher green revolution in the country. Education was reoriented largely recognizing the weakness of then exiting educational system. In the process of reorientation it was realized that students entering higher education lacked capabilities in use of information and learning sources. After much discussions in academic forums educating graduate students on information literacy or information competency skills was considered mandatory by the academic councils of many state agricultural universities and this was made essential part of the curricula for graduate student who are likely to be greater dependent on learning resources for their research and course work. However, under graduate were left with orientation and demonstration to library resources and facilities. The post graduate courses were ideally designed and structured to teach the students to be able to use library resources and to have necessary skills to identify and evaluate information sources and to develop their information skills for lifelong learning.

In the recent years Information Literacy has been a buss word and has been greatly discussed among information professionals and librarians. The need for information literacy has been greatly recognized by various prominent library association like ACRL (American College and Research libraries), ALA (American library Association), Council of Australian University Librarians (CAUL) etc. With paradigm changes in libraries and growing digital resources and digital contents increasing replacing conventional information sources has been posing challenges for information professionals to enhance information skills of patrons to enable them to exploit the digital or hi tech libraries that are being pushed to them so they are competent enough to find and analyze vast ocean of information sources, evaluate as per their need and use on their own and most importantly survive in digital world of information .

Objectives

This paper set forth the objectives to discuss Information Literacy programs /courses (IL) followed by the Indian agricultural universities; Analyzes and evaluates the post graduate IL in changing context. Evaluates the credit system and trends in restructuring the teaching contents. Examines the approach to uniformity in course contents and concept like subject librarians, blended learning or technology enhanced learning in teaching information skills. Also examines the situation of Information literacy for under graduates students.

Purpose, Limitations and Methods

The Information literacy programs conducted by libraries and Learning resources centers of 34 Indian Agricultural university Libraries across the country is surveyed and analyzed. The latest bibliographical details of universities were collected from the Indian Council of Agricultural Research (ICAR) website, www.icar.org. Terms like libraries Information Centers, and Learning resources centers are used interchangeably. Data is collected and composed from brief questionnaire, documentary sources and websites of libraries linked to the agricultural universities were analyzed and evaluated from the period of January 2013 to April March 2014 to find examples of Information literacy provided by Indian agricultural libraries using various foremost Information and Communication Technologies. Likewise E-mails were also forwarded to the library managers and teacher librarians to get copy of the course description and to understand some of the contents that were not clearly indicated and explained in their respective home pages. The study has the limitation of covering 34 state agricultural university out of 47 universities including one central university and a Deemed University (IARI) while excluding areas like Veterinary, Dairy and Fisheries universities and institutes like IVRI, NDRI and CIFE respectively.

Analysis and Discussions

Information Literacy is receiving increasing attention among Indian professional practice with emergence of electronic resources and digitization activities in libraries. As early as 1970's User instruction existed in Indian agricultural universities and were adapted from land Grant pattern of American universities. Formally, popularly known as User education, most universities had an embedded curriculum approach to enhance students information and research skills . This study investigates and reports on what agricultural universities are offering to enhance their students information competency skills in current situation when education sector is witnessing remarkable change in terms of e-learning , online courseware's and blended teaching methods . In addition, identifies areas like basic contents in terms of latest developments, library skills and research skills, latest developments to bring uniformity in course contents across all agricultural universities.

The findings reveals that out of 34 universities a surveyed significantly higher 90% offer IL through curriculum approach to graduate students and PhD students by different names, to mention a few like '*'Scientific Information and Retrieval Techniques*" , *Literature and Technical Writing*, "*Storage and Retrieval of Scientific Information*" and recently incorporated the "*'Library and Information Services''* recommended by the National Core Group of ICAR for restructuring the post graduate course curricula of Agricultural and allied sciences.

Indira Gandhi Krishi University Raipur was the first university to start a course "*Biological Literature and Reference Work* " way back in 1970 that was subsequently followed by other state Agriculture Universities in India for example G B Pant University of Agriculture & technology

(GBPUAT) by the title *Storage and Retrieval of Scientific Information* in 1976 and *Scientific Report Writing* in 1977 by Marthwada Agriculture University, Maharashtra in Western India.

As interest in Information Literacy continues to build upon , scholarly discussions began in 2009 to evolve Indian Agricultural education in tune with the changing national and international scenarios owing to new cutting edge technologies , improved tools for content delivery using information and communication technologies, besides globalization of education . After green revolution in India that introduced high yielding varieties and modern farming methods in 1968 the Indian agricultural scenario has seen a phenomenal strides over the period of 50 years . Past few years have seen decline in overall agricultural growth rate and there has been a stagnation in reserve food stocks. Great challenges continues to exist for Indian agricultural community to ensure sustained food security to growing Indian population at one hand and to enable all farmers and agro industries to become strong enough to face global competition.(NAIP Report, 2009-2010)

Stagnation in Agricultural research has been a topic of discussion in agricultural academic and research circles in the recent years and it is being realized that strategic modifications in the academic and research sectors are required that should be capable of addressing broader horizon of all components in higher education and research in agricultural and allied sciences to manage innovations and changing trends. The Indian council agricultural research (ICAR) the apex body responsible for coordinating and managing research and education besides funding SAU and ICAR research institutes took the task of restructuring the post graduates (master's and doctoral) course curriculums and syllabi of Agricultural and allied sciences at national level by constituting a National Core Group (NCG) of 12 academicians for restructuring the post graduate course contents.

In the process of restructuring postgraduate courses by Indian Council of Agricultural Research (ICAR) it was identified to ensure a uniform system of education following Common Academic Regulations (CAR) across the country. Under these guidelines the Information literacy courses that were offered by several universities by different course contents and course title got changed and was replaced by a common course called *Library and Information Services* with code No. PGS-501. Annexure -I highlights the new and previous course programs offered across Indian agricultural universities.

Restructuring IL

Prior to 2010 many state universities for example HAU, PAU, ANGRAU, UAS Bangalore were offering a blend of library and Information sciences slanted to User skills, Technical writing and Research skills. While library and information sciences topics centered around topics like type of library its functions , knowledge classifications, use of catalogue OPAC, sources of information, formulating search strategies, databases preparation of bibliographies , citation writing etc. Technical writing focused on preparing scientific reports, technical jargons like foot notes, proof readings etc. while some universities emphasized more on technical writing and research skills others gave extensive coverage to Library and Information Sciences for enhancing information competency of students. It was long felt that combining two important topics into one course was somewhat unusual, the author in one of her researches Singh , N (2002 and 2006)identified and suggested that as libraries are getting hi-tech and complex in nature with e-resources, WEBOPAC, access to database etc an exclusive separate credit course should be offered on information retrieval and library use and, technical writing that is , equally important, may be separated to be offered by Language and communication department of respective universities.

The ICAR National Core Group (NCG) responsible for restructuring the course contents of various Agriculture and allied sciences realized this situation in the year 2009-2010 when discussions and deliberations were being made for revamping the course structure six essential non credit courses were recommended out of these two were Library and Information Services coded PGS-501 and Technical Writing and Communication skills PGS-502. These are essential for completion of masters programs, the research students working for doctoral studies have been exempted if they have already studied at master's level.

The new course centers around more or similar updated course content from previous courses covering topics such as role of libraries in education, research and technology transfer, sources of information , intricacies of abstracting and indexing services, reference sources, citation tools and techniques, literature surveys and bibliographies. Use of electronic information resources and databases, formulate search strategies, OPACS including Internet resources and search engines.

While more than 60% universities were providing skill development course previously at Masters level and PhD, some 20 % universities for example Orissa University of Agriculture & Technology, (OUAT) Orissa Bidan Chandra Krishi Vishvidlaya, West Bengal, Sardar Patel University of Agriculture & Technology and Chandra Shekhar Azad University of Agriculture & technology, UP etc. did not have such courses for skilling students on Information Literacy. After formulation of common academic regulations by ICAR, these universities incorporated the imperative non credit course entitled Library and Information services (PGS-501) from the academic year 2010 onwards.

Earlier Information Literacy courses offered were largely credit based and were graded in the semester final examination, the present course is replaced by a non credit and mandatory course for completion of all Masters or post graduate programs in Agricultural and allied sciences. It is also noted that few state universities like G B Pant University of Agriculture & Technology, (GBPUAT), Uttrakhand University of Horticulture and Technology (UUHF) in North India are following their own course content and differ in credit system, for example at UUHF the course is of two credit hours and at GBPUAT the course is optional, or elective in nature, one credit, and based on the advisors and students to choose from various courses that may interest them. Few Universities like Mahrana Pratap University of Agriculture & Technology, Udaipur are understaffed in teaching library and information professionals and therefore have not been able to incorporate IL across their regular course curriculums.

Universities in India are a state subject and are autonomous to formulate their own course content and get approval from their respective academic councils for implementation. Although the Indian Council of Agricultural Research (ICAR) recommends the State universities to follow their guidelines, state universities can incorporate changes as per their requirements.

Ideally, information literacy is offered by University libraries under semester system and taught by teacher librarians who are either Assistant librarians, Associate or Deputy Librarian and as such there is no department of library and information sciences. At GBPUT, Haryana Agriculture University (HAU) and UUHF information literacy is taught by faculty of Library and Learning Resources Center under the department of Humanities and Social sciences.

Although a number of improvements and initiatives have been made to improve upon Information literacy programs in India, the Indian agricultural universities are yet to introduce subject librarians for teaching. Unlike the West, in US or Europe, Indian library system does not have the concept of

subject librarians to teach Information Literacy. Lately it has been a topic of discussion among professional circles.

Information Literacy for Undergraduates

Libraries in the present situation have undergone paradigm shift from acquisition of library resources to providing access to information from online catalogues, network servers, web resources etc. Most libraries are now functioning under automated environment having digital resources, therefore such courses are required not only for post graduate students but also the Undergraduates. With number of undergraduate students entering higher education the possibility of ensuring these students of having acquired correct skills without attending information literacy courses is essentially difficult to monitor. Tirth (1977) stated that an under graduate finds himself bewildered when he/she first enters a university library and seems overawed to find it so different from library of his school.

Currently the Under Graduates students are provided with orientation of library with guided tours and demonstration about library resources and access to computer based learning resources via university Intranet, use of OPACs etc, this is just not enough to skill them on information competency. Therefore, embedding of information literacy skills across undergraduates program is the current challenge for Indian agricultural universities, especially the librarians and information manager who will require to play a proactive role in getting them implemented across regular curriculums.

If we look at the current course structure one credit does not seem to be enough at providing students with theoretical skills as well as practical knowledge required to be able to learn, practice and apply information identification and evaluation skills successfully. It is also noted that unlike other subject areas in Agricultural sciences, information literacy through blended methods incorporating online or e-learning courseware /tutorial packages have not been developed for this sector. Most of the instructional methods is conventional i.e. face to face and lacks novelty.

Blended Learning

Last few years have seen a number of changes in higher education sector which have exerted pressure upon conventional method of teaching. Blended learning is being recognized among teaching community as it has the potential and advantage of incorporating both online and conventional instructional methodologies. The goal of blended learning is to provide more efficient and effective instruction experience by combining various delivery modalities (Gray Harriman 2004). Therefore, blended learning is the current need as well as challenge for Indian Agricultural information professionals to develop such platforms and courseware's to enhance their information literacy programs. Such learning programs have the potential of learning objects or granules of knowledge that are able to be shared throughout (Partridge H, et al (2008). Veronikas and Shaughnessy (2004) points out that these object can be stored, revised and even mixed and matched to create new learning experiences for our students .

In Indian Agricultural system, the launch of world bank aided National Agricultural Innovative Project (NAIP) in 2006 had marked new chapter in Agricultural research, these project broadly aimed to make agricultural research knowledge based and IT oriented so as meet the fast changing consumer demands. Indian Council of Agricultural Research (ICAR) which is implementing the projects is reaching out research centers, State Agricultural Universities, Science and Technology Institutes for innovative ideas and research. NAIP was planned by ICAR under four components. To

create an environment that will be conducive to the flow of knowledge, collaborations, experimentations and implementation of innovations was the mandate of component one. State agricultural universities were emphasized under this component and were encouraged to work on project like creating digital repositories, consortiums for e-resources and development of e-courses etc. subsequently digital repositories like Krishi Prbha and was CeRA were created. Several e-courses for graduate degree programs were created under Moodle platform, for example e-courseware for bachelors in Agriculture and Veterinary Sciences by Tamil Naidu Agricultural University (TNAU) and Tamil Naidu Veterinary Sciences and Animal Husbandry (TNVASU); e-course in Horticulture by University of Horticultural Sciences, Bagalkot; e-Home sciences course by Acharya N.G. Ranga Agriculture University (ANGRAU) etc. in South India were developed for providing digital content portable anywhere, making it available online as well as offline to captivate and create interest in undergraduates studies (NAIP Report, 2011-2012). However, such courseware are yet to be developed for Information Literacy. Few universities like G B Pant University of Agriculture and technology have taken initiatives by creating some digital content for postgraduate students.

Suggestions and Conclusion

Results from this study are encouraging as with previous studies that Indian Agricultural universities now have largely a uniform course content on Information literacy for post graduate studies across the country except few universities. However, there are no formal channels for undergraduates to learn information skills. Most students acquire skills necessary to exploit electronic resources either by trial and error or through guidance from other students on their own, raising the questions on effectiveness of these skills. Therefore, challenge lies on teachers librarians to introduce information literacy in under graduate programs through structured courses embedded in regular curriculums.

Higher education has seen a number of changes in this era of globalization, and ICT tools and techniques have facilitated and enhanced learning through innovative and more flexible and interactive approach for delivering content through online systems also known as e learning or technology enhanced learning .

In Indian education system precisely Agricultural and allied sector most of the instructions have been through conventional ways and same methods of instructions followed over the years have dulled our senses. A Fresh and innovative perspective in mode of delivering educational content engaging online e-learning experiences is needed. A beginning has already been made with blended learning such methods of learning have mixed situation, while some subjects are advanced in online courseware's other are in developing stages for example, e-courses for Under Graduates in seven major disciplines of Agricultural sciences is in progress in the form of projects under NAIP for which an online portal has also been created. Tamil Naidu Agricultural University (TNAU) and ANGRAU, Hyderabad have recently created e-course content in Agricultural sciences for under graduates (UG) and several disciplines of Home sciences studies respectively (NAIP Report 2012-2013). Online content creation for Information literacy by Indian Agricultural libraries is in early stages and lot needs to be explored and exploited in future. Sundararajan and Gopal (2014) points that despite weaknesses, online education is going to be the next big phenomenon in India. Further research is necessary to show how best Information Literacy courses can be provided through blended approach

and using state of the art technologies in educational sector. The information professionals will also need to stay alert to changes on how and what they teach and keep pace with technology enhanced learning. As electronic resources in the form of e-books, e-journals, databases and now digital course contents continue to grow and increasingly play a significant role in teaching and learning environment by facilitating sharing, content portability, and easier navigation, Indian Agricultural libraries require to train their patrons with necessary information skills for effective use of these resources and promote technology enhanced learning. MOOC or Massive Online Open Access Content have also made mark in the field of education in the recent years and needs to be explored by information professionals for information literacy to create learning environment characterized by novelty, variety and diversity.

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Appendix-I

Indian Agricultural Universities offering Information Literacy Courses embedded in course programs

Sl.	Name of the Universities in different Sates of India	NEW COURSE As per ICAR Guidelines 2009-2010, PGS-501 Compulsory	PREVIOUS Course Titles	UG/PG /Ph.D.	Year of Start	Mandatory / Optional Previously
1	Acharya Narendra Dev University of Agriculture. & Technology, Faizabad.	Yes	Use of Scientific and Technical Literature1 (1+0)	PG / Ph.D	-	C
2	Assam Agriculture &Tech University, Jorhat, Assam	Yes	Technical Writing& Library Use (TWL) Non credit	PG	1983	C
3	Anand Agriculture University, Gujarat	Yes	-	PG/PhD		C
4	Babashahed Sawant Konkon Krishi University. Goa	Yes	-	-	-	-
5	Bihar Agriculture University, Bihar	Yes	-	-		-
6	Birsa Agriculture University, Bihar	Yes	-No course	PG		C
7	C C S Haryana Agriculture. University, Hisar (HAU) Haryana	Yes	Library Science and Technical writing 1(1+0)	PG / Ph.D	1982	C
8	CSA University of Agriculture & Technology Kanpur, UP	Yes	No course	-	-	-
9	Dr Balasaheb Sawant Konkon University	Yes	-	PG	-	-
10	Dr. Panjab Rao Deshmukh Krishi Vidhyapeeth, Akola	Yes	Scientific Report Writing and use of Library AG,Extn-6131 (1+0)	PG	1978	C
11	Dr Y S Parmer Univ. of Horticulture & Forestry, Solan	Yes	Literature and Technical writing –501 1 (1+0)	PG / Ph.D	1985-86	C
12	G B Pant University of Agriculture. & Technology, Pantnagar	NO	Storage & Retrieval of Scientific Information-610 1 (1+0)	PG	1976	O

13	Himachal Pradesh Krishi Vishwavi. Palampur	Yes	Literature and Technical Writing – 5011 (1+0)	PG	1982	C
14	Indian Agriculture Research Institute (IARI) New Delhi	Yes	Agriculture Information System (AIS)1 (1+0)	PG	1982	C
15	Indira Gandhi Krishi Vishwavidhyalaya Raipur, MP	Yes	Biological Literature and Reference work 1 (1+0)	PG	1970	C
16	Jawaharlal Nehru Krishi Vishwavidhyalaya., Jabalpur, MP	Yes	Agriculture Information System (AIS)1(1+0)	PG	-	C
17	Junagarh Agriculture University, Gujrat	Yes	-	-		-
18	Mahrana Pratap University of Agril. & Technology, Udaipur, Rajasthan	No	No Course-	-		-
19	Navsari Agricultural University, Gujarat	Yes	-	-	-	-
20	Rajasthan Agriculture University, Bikaner, Rajasthan	Yes-	Library and Information Usage 1(1+0)	UG	-	C
21	Rajendra Agriculture University, Samastipur, Bihar	Yes	-No course	-	-	-
22	Sardarkrushinagar Dantiwada Agril.Univ. Banaaskantha Gujarat	Yes	Scientific and Technical Writing STW 3(3+0)	PG	-	C
23	Shere Kashmir University of Agriculture Sciences & Technology, Shirinagar	Yes	Library Science & Technical Writing LIB 601, 1(1+0)	PG	1982	C
24	Sher-e Kashmir University of Agriculture & Technology Jammu	Yes	Library Science & Technical Education 1(0+1)	PG	1999	C
25	Sardar Patel Agriculture University, Meerut UP	Yes	-No course-	-	-	C
26	Tamilnaidu Agriculture University Coimbatore	Yes	Research Methodology & Library ABT -610 1(1+0)	PG	-	C
27	University of Agricultural Sciences, Dharward.	Yes	Introduction to Library Sc. (Lib-14)1 (1+0)	PG	-	C

28	University of Agriculture Sciences, Bangalore	Yes	Utilization of Library facilities (Non Credit) ORN	PG/PhD	-	C
29	Kerala Agriculture University, Trissur	Yes	Use of Library part of Research planning & Implementation RM (610) 3(2+1)	PG /PhD	1996	C
30	Manipur Agricultural University Manipur	Yes	-No course	-	-	-
31	Marathwada Agriculture University Parbhani	Yes	Scientific Report Writing 2(1+1)	PG	1977	-
32	Orissa University of Agril & Technology, Bhubneswar	Yes	-No course	-	-	-
33	Punjab Agriculture University, Ludhina	Yes	Technical Writing & User Education (TW 501)	PG	-	C
34	Uttrakhand University of Horticulture & Forestry , Uttrakhand	NO	Scientific Information & Retrieval Techniques	PG	-	O
	Total : 34	Yes : 31 (91.17 %)	Yes : 21 (61.76%)			C : 21(61.76%)
		No : 03 (8.82%)	No : 7 (20.58%) NA : 6 (17.64%)			O : 02 (5.88%) NA :11(2.35%)

Abbreviations Used

***** PGS- 501 : Library and information services is no credit compulsory course
ICAR : Indian Council of Agriculture Research
C : Compulsory course
O : Optional course
ORT : Orientation only
IVRI : Indian veterinary Research Institute
NDRI : National Dairy Research Institute
CIFE : Central Institute of Fisheries education
CeRA : Consortium of e- resources in Agriculture