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Components of Digital Humanities in Indian LIS Curricula: A Conceptual Analysis

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ABSTRACT

Digital Humanities (DH) is an interdisciplinary academic discipline that employs computational techniques to address humanities and social science problems. It merges various domains such as history, philosophy, literature, and modern languages, offering unique approaches to traditional inquiries. DH has gained considerable popularity among students, academicians, and Library and Information Science (LIS) professionals, creating new employment opportunities in libraries, museums, archives, cultural heritage organisations, data science, and other sectors. In India, DH is still in its early stages, with diverse manifestations in university-level teaching and learning practices. This study examines the DH components integrated into the LIS course curriculum by analysing syllabi and course descriptions from central universities. Additionally, we briefly review DH research projects and programs in India and abroad. To enhance the design and implementation of DH programs and degrees alongside LIS curricula, a course module for DH within LIS schools is proposed. This research extends insights into DH pedagogical practices within librarianship education, offering a comprehensive perspective on contextual frameworks, academic discussions, development trends in DH, and the LIS field in India.

Keywords: Digital humanities; Digital pedagogy; Library and information science; Latent dirichlet allocation; Curriculum

1. INTRODUCTION

Digital Humanities (DH) is an emerging field of intellectual endeavour, and the term refers to "work at the intersection of digital technologies and the humanities discipline.[1]" DH is not just about 'Humanities' or 'Digital'; rather, is a composite approach where it tries to solve critical humanities' problems through the lance of computational technology. It offers predominantly academicians and other professionals to come together to learn, share, organise, visualise and effectively combine skills to conduct interdisciplinary research. Recently, technology-based teaching-learning practices have opened new possibilities for LIS students to bridge the gap between computational technologies and traditional arts, literature, religion, etc. In India, DH is currently going through a negotiation process, although there is no doubt that the field is expanding. It is not entirely clear what should be included and how the landscape should be understood or structured.

The emerging field creates new job prospects for LIS professionals in various sectors and creates designations like 'Digital Humanities Librarian', 'Digital Scholarship Librarian', 'Data Librarian', 'Digital Archivist', 'Digital Preservation Librarian', 'Digital Pedagogy and Scholarship Specialist', 'Data Visualisation Librarian' and so forth (CLIR+DLF Job posts[24]). According to Sula, *et al*.[2] ALA-accredited iSchool programmes in Canada and USA offered the intersectional courses DH and LIS. DH has incorporated several LIS courses in the specific interests of cultural heritage, digital preservation, human-computer interaction (HCI), social networking, etc. Our study should reveals the Indian perspective of DH concerning LIS education. The study aims to investigate existing DH courses and components under the LIS programmes of 22 central universities. An exploratory qualitative data analysis was done by the use of computational text analysis. The findings of this study will provide a foundation for the DH course in the LIS field. The study has recommended designing DH programmes and pedagogical approaches in cultural heritage, archives, LIS and other areas.

2. REVIEW OF LITERATURE

It is hard to define DH teaching learning boundaries, which cover the intersection of humanities and computational

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technologies and include other fields. According toVarner[3], it is difficult to precisely the term DH and its competencies. DH practices are not a solitary affair[4] rather; it is more collaborative and symbiotic in nature. Librarians are crucial partners in DH subcategories of "online social networking, text mining/data analysis, data visualisation, digital mapping, digital libraries and repositories and digital pedagogy."[3-5] In addition, LIS professionals can work with academicians to create digital corpora design and develop websites, publish digitally and crowd-source projects. It implies that the teaching-learning-engagement in DH is more harmonious[6] than the other fields, which might transform the way of traditional teaching approaches.

Previous studies have investigated DH educational practices[7] and pedagogical settings, from humanities computing to 'Digital Humanities' or conventional culture to 'Digital Society'. Details investigation on course curricula[8], digital scholarship practices[9], Libraries[10], DH in LIS[11], DH course curricula has been reported in numerous other studies. The development of DH programmes varies from place to place (DH course registry). Yao and Xiao[4] have addressed how librarians and library professionals can teach DH programmes. However, none of the studies has systematically analysed DH contexts in Indian LIS schools.

In India recently, a few universities and institutes such as Jadavpur University (launched its first DH degree programme in India, 2013[22] University of Mumbai, University College for Women Koti, Ravenshaw University, Digital University Kerala, IIT Jodhpur, IIT Indore, IIIT Bangalore have started formal DH degree programme (Postgraduate Diploma, Bachelor, Master and PhD-level programmes). Other pioneer institutes such as Presidency University, Bharathiar University, IIT Delhi, IIT Gandhinagar, Savitribai Phule Pune University, Srishti Institute of Arts and Design and Technology, and FLAME University[12] have provided collaborative opportunities.

Central universities mostly offer informal settings for Digital Humanities (DH) practices. For instance, Jamia Millia Islamia (JMI)has initiated a DH certificate programme within its English department. Similarly, Aligarh Muslim University (AMU) has included DH as an elective course in its MA English programme. Delhi University (DU) has integrated DH as a core course in its Bachelor's programme. At the Central University of Tamil Nadu (CUTN), the History department has introduced a course titled 'Techniques of Historical Research and Computer Application', which includes DH components.[13]

The Pondicherry University has introduced an International DH Research Methods course through their English department. BHU-STRIDE (Banaras Hindu University, Scheme for Trans-disciplinary Research for India's Developing Economy) designated DH as a major focus during a two-week program in 2019. However, we have observed limited connections with Library and Information Science (LIS) departments, librarians, scholars, and students. This may suggest that LIS academics are not extensively involved in the DH context.

While over the past decades, libraries and librarians in the USA and Europe have actively engaged in DH, the scenario in India is not far behind. Our study unveils that DH is already a part of LIS course curricula, through the lens of the the DH course registry and iSchool DH programmes. This study aims to advocate DH programmes in LIS bridging the gap between DH and LIS domains.

3. OBJECTIVES AND METHOD OF STUDY

In the current study, we have undertaken an analysis of the Library and Information Science (LIS) program curricula across central universities in India. According to the University Grants Commission (UGC), there are a total of 54 central universities in the country.Ref (23). Our survey involved a thorough examination of the departmental websites of these 54 central universities. Our findings reveal that out of these, only 23 universities offer an LIS program across different academic levels, including Postgraduate Certificate, Bachelor's, Master's, and PhD.

We have excluded Hemvati Nandan Bahuguna Garhwal University from our study due to the unavailability of any course syllabi or curricula on their official website. The data collection process occurred between November 1st and November 15th, 2022. The majority of the university websites provide comprehensive information about their course curricula. This information typically includes details about individual courses, their objectives and learning outcomes, as well as recommended reading materials. It is important to mention that in only a few exceptional cases, this detailed information was not readily accessible on the university websites.

The main purpose of this study is to find out LIS education trends and broad technological aspects of intersectional DH areas. Accordingly, the present study aims to achieve the following objectives:

(1) To establish a detailed understanding of technocratic LIS courses and curricula agenda of Indian universities.
(2) To examine DH context in LIS formal education and contextualise the education model concerning the wider GLAM (Galleries, Libraries, Archives, and Museums) sector.

```
#Create a corpus that contains
words

# Create a document-term matrix

>document <-
Corpus(VectorSource(All_opinions)
) DH course curricula has been reported in
numerous other studies.

<<<<SimpleCorpus>>>

Metadata:  corpus specific: 1,
document level (indexed): 0

>dtm <-
DocumentTermMatrix(document)
```

Code snippet: Document vector space

4. DATA COLLECTION AND ANALYSIS

We have used the *tableau* software tool to visualise the demographic view of the Indian LIS school region-wise. We have used the computational model to analyse the 22 universities course contexts contexts/ descriptions to identify the primary topics covered in the LIS course. For this study contents from 60 course syllabi have been collected (creating a corpus for vector space, terms 10335) have been collected and analysed. In the PhD curriculum, we have gathered coursework materials. We excluded individual analyses of the course contents (PG Diploma, Bachelor's & Master's levels) because the corpus data was minimal to perform the Latent Dirichlet Allocation (LDA) model.

The preprocessing are as follows:

(i) All words of the full-text curricula were converted into lowercases,
(ii) NLTKpackage[30] was used to remove stop words in the English language,
(iii) All numbers, punctuations, and white space were removed,
(iv) A term-matrix of all the documents (curricula/ syllabus) was created

Topic modelling is one of the effective ways of analysing and examining the textual context. We consider topic models to be effective models for examining textual material.[14] The LDA model[29] was performed using *Rstudio* programming environment topic model library. The per-topic-per-word computer models were retrieved from the model using the '*tidytext'* package[31], which is called beta (β). The number of topics was set to 8, and 10 (n=10) words were grouped in each cluster. In the second phase of the study, we used the qualitative thematic analysis technique to identify the main topics covered in the LIS course in relation to DH discourse. We extensively followed Walsh, *et al.*[15] study, that analysed the iSchool DH course and ALA-accredited programme.[2]

5. COURSE AND CURRICULA LIS IN INDIA

Education in library and information science has been available across different program levels in India for over a century. The growth in this field has been steady. Still, in the last two decades, it has gained momentum, notably as our society shifted from an industrial base to one driven by data and information. Currently, we are advancing toward a knowledge-based society. Information and Communication Technologies (ICTs) have notably impacted the landscape of LIS education in India. This domain is expanding its scope to serve the community better, and incorporating Digital Humanities (DH) as an emerging subject holds the potential to contribute to this ongoing progress. Figure 1 shows six different zones in India, and subsequently, in North Eastern 6, Northern 6, Central 5, Eastern 1, Western 1, and Southern Region 3 Central Universities offered formal LIS degree programmes.

As indicated in Table 1, the primary programs in focus are the Bachelor of Library and Information Science (BLIS) and the Master of Library and Information Science (MLIS). However, a significant disparity exists in the

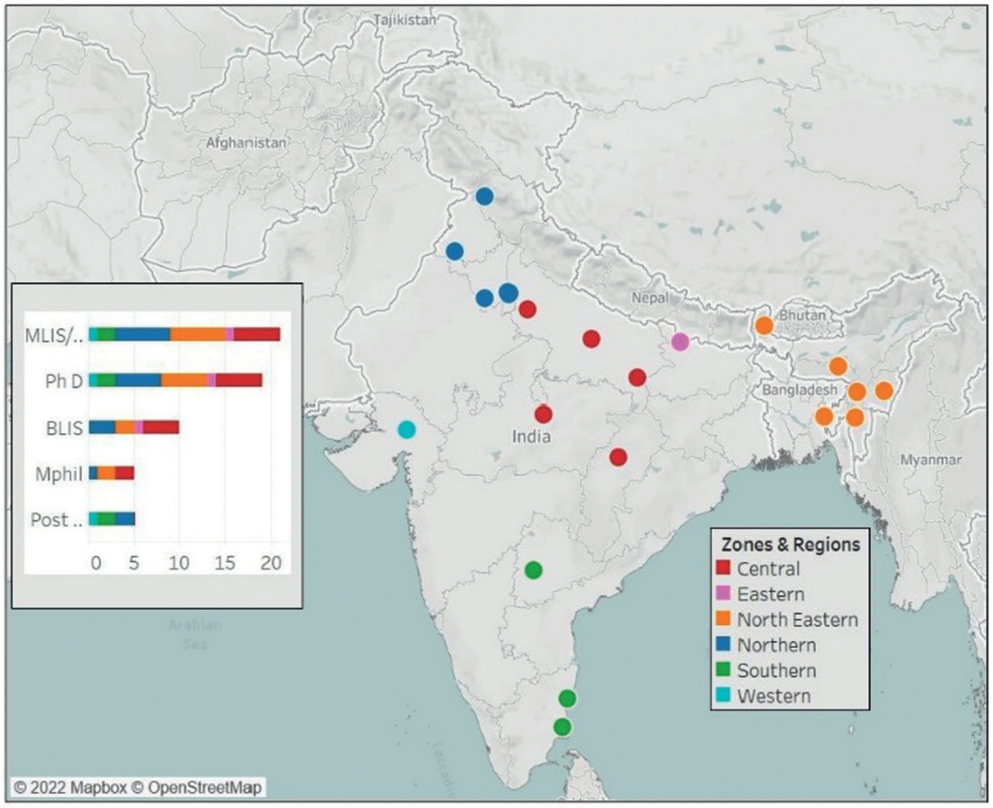


Figure 1. Demographic view of the LIS degree programme offered by the central universities.

duration patterns between these two courses. Typically, universities offer a one-year BLIS program spanning two semesters, which generally encompasses around 40 credits (as observed in IGNOU courses[32]). On the other hand, the MLIS program extends over two years, equivalent to four semesters, with credit requirements ranging from 80 to 100 credits (Assam University course[33]). Certain universities have introduced an integrated MLIS program spanning two years (BLIS+MLIS), covering four semesters, with total credits varying between 72 and 80. An example of this can be found in the syllabus of North Eastern Hill University course.[34] Apart from these, MPhil and PhD programs stand as foundational research options within LIS education. Table 1 demonstrates that most institutions offer PhD programs to advance and reinforce the field of LIS. It becomes apparent from the data that there is a lack of uniformity in terms of program levels, durations, and structures within formal degree offerings.

Table 1. Level of LIS formal education

Region-wise university	PG diploma	Bachelor's (BLIS)	Master's (MLIS/ Int. MLISc/ MLIB)	MPhil	PhD
North Eastern (6)	0	2	6	2	5
Northern (6)	2	3	6	1	5
Central (5)	0	4	5	2	5
Eastern (1)	0	1	1	0	1
Western (1)	1	0	1	0	1
Southern (3)	2	0	2	0	2
Total no. of different levels of LIS courses	**5**	**10**	**21**	**5**	**19**

6. COURSE CONTENT ANALYSIS

In this section, we present two studies of LIS course modules from the standpoint of the central universities. First, we examine the overlapping presence of DH contents within the LIS school syllabus. Second, we chose LDA modelling[16] to analyse course descriptions for LIS that were gathered from individual websites. These two findings showcase the significant integration of Digital Humanities (DH) within the LIS field. Additionally, they highlight the potential for Indian LIS schools to introduce new themes and research endeavours that could contribute to the evolving landscape of DH.

A total of 60 courses were selected across 22 institutions and 5 courses were obtained through direct request to the instructors. We analysed course and curriculum titles, course descriptions, syllabi, learning outcomes, recommended course materials, assignments, and technological lab practices through text analysis. We found that all 6 region courses are common, with no significant differences. However, the technological aspect of the library is common ground for DH practitioners. PG Diploma and BLIS courses are offered in professional librarianship training programmes along with information source, systems and management. Intersectional study areas which cover Indian university master courses offer web scripting languages (such as PHP, XML, XHTM, HTML, SQL); ICT skill (data types, structure, OS); digital library& library automation (Digitisation, OCR, UNICODE, DRM, OAI/PMH, SWORD, various software); Metadata & Linked data (library standard MARC, Dublin Core, ANSI/NISO, METS, MODES); Digital preservation & open repository (archival standards RDA, EAD, DACS, Open DOAR, ROAR); emerging trends in IR (Artificial Intelligence, Expert System, Text Summarisation); curation of Digital content (CMS system such as Drupal, Joomla, word process), website design & semantics web (Web 3.0, SNS), data visualisation (only used excel or spreadsheet graphs and network analysis software). In comparison, PhD coursework offer basic ICT knowledge, research ethics (IPR and other privacy issues) and some amount of statistical knowledge (SPSS, STATA, and other quantitative software). The DH perspective in LIS primarily offers limited technical expertise and societal problem-solving skills in humanities areas. However, some of the universities teach components of DH.

We used LDA techniques to explore the course descriptions to determine the primary subjects taught in the LIS course. The LDA model can identify the prevalence of topics and themes of the contents by the document-level metadata. We assigned 8 topics with 10 terms in each group across LIS curricula by using data-driven technology on visual representation. Our analysis has identified the top 8 topics (Fig. 2) in all the descriptions of course text which are listed as under:

Topic 1: Library, knowledge management, digital tools & analysis
Topic 2: Information, indexing, knowledge development and data analysis
Topic 3: Information literacy, library development, data science
Topic 4: Library software, web development, social system
Topic 5: Information management system and research, digital libraries
Topic 6: Data, information, knowledge source and classification system
Topic 7: Information research, library user, digital sources
Topic 8: Information communication, social services

Result reveals that descriptive Topic 1 terms digital research and library; Topic 3 web development and information system; Topic 5 Data Types, and social tools; Topic 7 Digital Science and Information; are the core components of the DH course as discussed in (2,15) studies. Topics (1, 2, 3, 4, 8) are the core cluster of humanities and computation-oriented course topics, respectively.

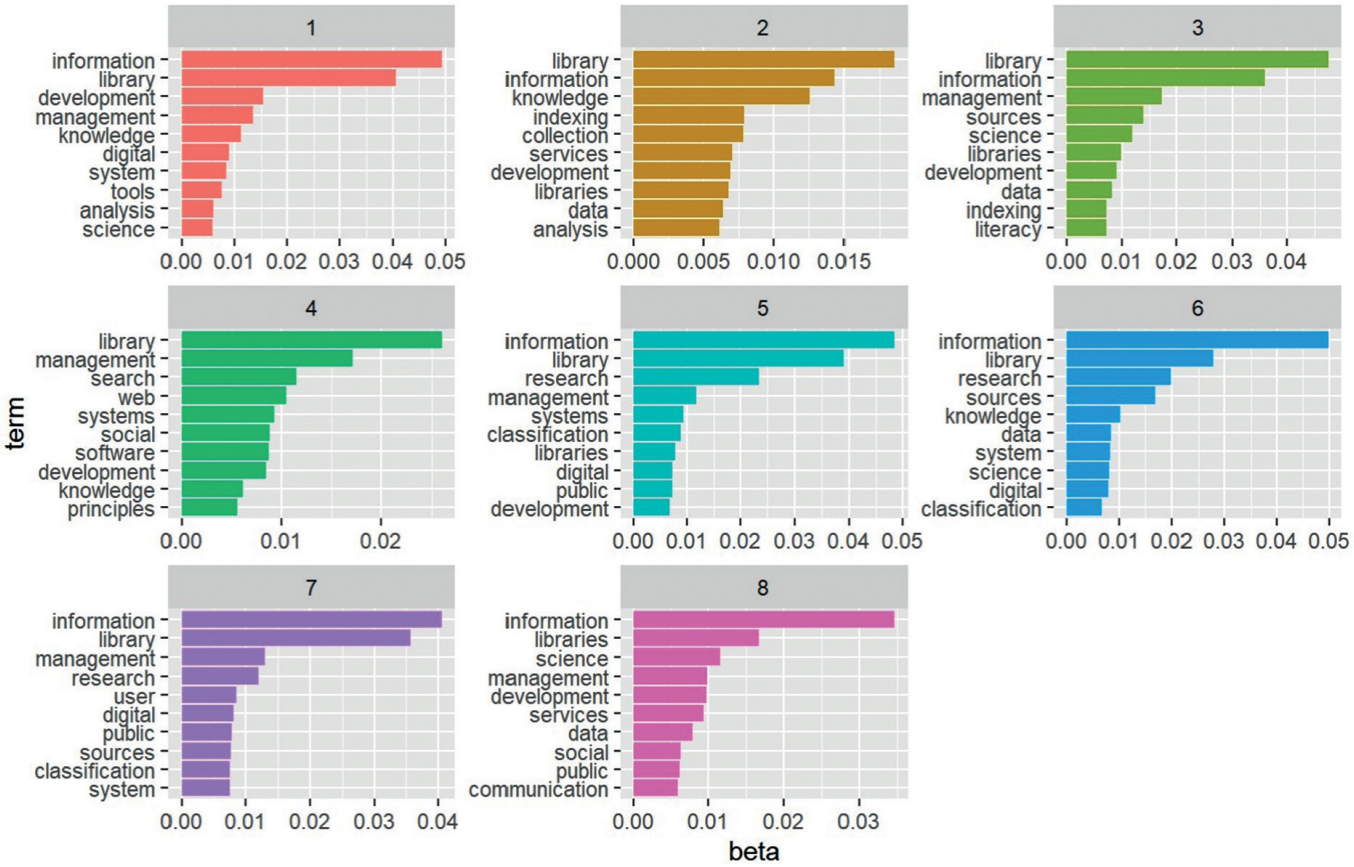
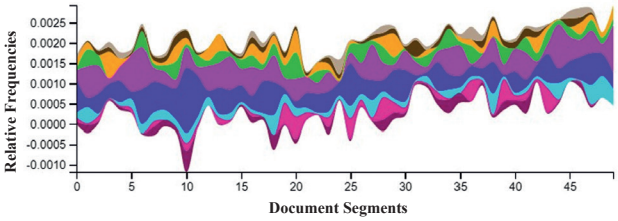


Figure 2. Visual representation of the most common term in a topic.



It depicts the relative frequency and segmentation of 60 courses. Each coloured line represents a category or document term: violate= information; pink= knowledge; purple= Library; orange= research; magenta= digital; green= management; light blue= development; grey= software; light grey= web. (X-axis-correspondto segment; Y-axis- corresponds to relative frequency) (Voyant tool).

Figure 3. Stream graph.

Figure 3 illustrates a more aesthetically appealing representation of the words presented throughout the course description (60 courses) and their change in relative frequency. A stream graph automatically extracts the course description into topics and subcategories.

7. DH COURSES OFFERED IN INDIA

India's cultural expressions are manifested through both conventional and contemporary means. Despite the assumption that contemporary culture will inevitably evolve towards a completely digital future, the reality is that India has a diverse cultural landscape that spans various historical periods.[17] Therefore, we cannot disregard the coexistence of multiple temporalities in Indian culture.

DH programmes have been designed to address developments, implications, and inflections of digital technologies on historical and contemporary culture, and society. Over time, the natural sciences, social sciences, arts, humanities, and technology have intersected and diverged. However, digital scholarship in the social sciences, arts, and humanities is not an emulation of the natural sciences. Rather, it aims to enhance the fundamental tasks of these disciplines, such as preserving, reconstructing, transmitting, and interpreting the human record, using technology.

The primary aim of DH programmes is to equip students with a comprehensive understanding of how digital technologies and economic forces have revolutionised the study of humanities, social sciences, and related fields. These programs offer critical insights into the key factors that continue to influence and shape the integration of various disciplines.[12] A detailed list available in Appendix 1 table 2 Digital Humanities (DH) courses that are currently offered in Indian universities and specialised centres. It is not an exhaustive list, but it highlights the prevalent DH practices in India.

8. PROPOSED DH MODEL IN LIS

Based on the analysis provided above, it becomes evident that developing DH course curricula within the framework of LIS programs, specifically targeting Digital Humanities Librarianship, Digital Scholarship, or the data science sector, necessitates comprehensive support for

teaching courses and research-oriented scholarly activities. Certain LIS schools have already embarked on formal DH education initiatives on a global scale. These include offerings such as Certificate programs (e.g., University of Iowa, ALA-accredited; University of Maryland), Master's programs with a DH focus (e.g., MA/MSc at University College London, Bar-Ilan University, Manchester Metropolitan University), and Master's programs in Cultural Society (e.g., MA at the University of Sheffield). Additionally, some MLIS/MIS programs provide specializations in DH (e.g., National Taiwan Normal University, Indiana University at IUPUI & Bloomington, Humboldt-Universität Zu Berlin, University of Borås) – a detailed list of which can be found in Appendix I. However, in the context of India, the scenario is distinct. DH programs have predominantly originated in technical universities (such as IITs, IIITs, and others). Nevertheless, there has been a gradual and steady expansion of DH initiatives across central, state, and private institutions within the past five years. A training model tailored to DH education within the scope of LIS has been formulated to address these dynamics.

We have examined DH course curricula and devised a comprehensive course module tailored for the LIS program, illustrated in Figure 4. Our proposed module encompasses a diverse range of courses, starting from foundational concepts and progressing to more advanced topics. The aim is to enrich students' learning capabilities and equip them with the necessary skills for potential employment opportunities in Digital Humanities.

Of particular note is the recommendation for implementing an intensive, highly focused, and practical-oriented training program. While this model aligns with the holistic approach many degree programs adopt, we specifically advocate its integration into the Master's program. DH librarians should be open to embracing technology and be willing to acquire basic programming or web skills. These skills are often invaluable for comprehending data structures and communicating effectively with technical experts.

9. DIGITAL COMPETENCY AS PER NATIONAL EDUCATION POLICY (NEP)

The LIS field overlaps with other technical fields like computer engineering and management etc. The components of technical education should be incorporated into the curriculum of LIS. Sections 20.6 and 23.8 of NEP 2020[19] advocates that young professionals should be imparted training in AI, 3-D machining, big data analysis, and machine learning -these should be made an integral part of education at the degree level to enhance employability of the students.

DH and librarianship focus on transforming traditional libraries into digital libraries, museums into virtual/e-museum and digitally preserving artefacts. As per analysis, LIS schools have surveyed their syllabus to address the needs of the evolving times and have included digital education, website designing and many other important aspects and tools of ICTs. But still, much needs to be done. The study and research on the effective use of disruptive technologies should be undertaken. It is expected that disruptive technologies will drastically change the ways in which libraries function. It is the need of the hour that PG and Doctoral programmes in LIS include research and training on "AI +X multidisciplinary" fields with special emphasis on DH.[19]

Figure 4. Proposed course module for DH.

Numerous online courses on DH are available on the internet, such asedX, Coursera, Udemy, and SWAYAM. Some European and American universities offer online DH certificate courses, such as Arizona State University, Linnaeus University, etc. DH also supports open science and open database movement. Teachers can learn, prepare and become competent them self to enter the DH field through these courses.

10. DH EXTENDS COLLABORATIVE OPPORTUNITIES

Collaborations allow scientists from different institutions and universities in developing and developed countries to share knowledge, expertise, tools and techniques. It also extends the research process and increases visibility. DH is a highly cross-disciplinary field which entails a confluence of expertise, approach and engagement from diverse research areas like computer sciences, humanities, linguistics, library and information science, computing tools and techniques of network analysis, data visualisation and so on. For instance, the 'Bichitra Project' online Tagore Variorum[25] (School of Cultural Texts and Records, Jadavpur University, has been sanctioned and funded by the Ministry of Culture on the occasion of Rabindranath Tagore's 150th birth anniversary, in the project where computer scientists, book studies, library and information science people developed an integrated knowledge hub. DH promisesa wide variety of opportunities such as digital scholarship, linguistics, distant reading, network analysis, data visualisation etc. Other DH projects are 'The Dutch Cemetery in Chinsurah[26]', 'Digital Hampi[27]', 'Project Madurai[28]', etc.

Designing and implementing any new programme is difficult to quantify, but well-deserved skill-sets according to the job market will give students an advantage. Designing infrastructure, resources including teacher ability must develop to understand potential outputs. A typical DH programme requires a core curriculum and advanced/elective courses.[19] The course design may vary from institute to institute based on subject expertise and collaborative institute. Collaborative institutes or departments may participate in capstone projects. In this regard, UGC's CBCS system would be beneficial for students to learn and earn technological and humanities course credit from other departments of the same schools.

11. RECOMMENDATIONS FOR FUTURE RESEARCH

More studies should be taken up to ascertain the skills picked by students in LIS schools are implemented and practised in libraries. Furthermore, surveys need to be undertaken to assess to what extent libraries have extended Digital Humanities services. Further research can be carried out on the entire LIS curriculum analysis in India to get the overall demographic picture of the DH setting.

12. CONCLUSION

The study has undertaken a thematic analysis of the contents of the LIS curriculum taught in Indian universities to assess if components of DH are taught. It has been highlighted that there is no full-fledged course paper on DH. Various aspects of DH are covered across different courses. It has to be advocated that DH should be taught in LIS schools across India. The UGC, UNESCO, or a similar body may also prepare a model course curriculum in DH. Our results should provide developing new or upgrading and improving contemporary librarianship programmes for DH exploration[21]. DH practices will equip the students to grab golden opportunities for the upcoming job market in India and abroad. It will allow them to move fearlessly in any direction, including data science, cultural heritage, digital conservation, and GLAM to the cyber culture field.

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Appendix 1: Supporting Information

Table 1. List of central universities offered LIS programmes in India

University	Zone or region	PG diploma/ certificate	Bachelor's	Master's (MLIS/ MLIB)	M.Phil.	PhD	No of faculty
Aligarh Muslim University	Central		1	1	1	1	8
Assam University	North Eastern		1	1	1	1	4
Babasaheb Bhimrao Ambedkar University	Central		1	1	1	1	6
Banaras Hindu University	Central			1		1	8
Central University of Gujarat	Western	1		1		1	4
Central University of Haryana	Northern			1		1	2
Central University of Himachal Pradesh	Northern			1		1	2
Central University of Punjab	Northern			1		1	5
Central University of Tamil Nadu	Southern			1		1	5
University of Delhi	Northern		1	1	1	1	7
Dr. Hari Singh Gour University	Central		1	1		1	3
Guru Ghasidas Vishwavidyalaya	Central		1	1		1	1
Indira Gandhi National Open University	Northern	2	1	1		1	6
Jamia Millia Islamia	Northern		1	1			No individual Department, Zakir Hussain Library runs the programmes
Mahatma Gandhi Central University	Eastern		1	1		1	4
Manipur University	North Eastern			1		1	6
Mizoram University	North Eastern			1	1	1	8
North Eastern Hill University	North Eastern			1		1	6
University of Pondicherry	Southern	1		1		1	7

Sikkim University	North Eastern			1		
Tripura University	North Eastern		1	1	1	3
University of Hyderabad	Southern	1				No individual Department, Indira Gandhi Memorial Library runs the programme.

Appendix II

Table 2. Overview of Digital Humanities (DH) courses in India enumerating the higher educational institutions which offer programmes and courses in DH, ranging from certificate to PhD

S. No.	Course/ university/ centres/ institution	Short/ semester courses	PG certificate/ diploma	MSc/ MA/M.S. by research	PhD	Hyper links
1	Winter Institute in Digital Humanities at IIT Gandhinagar, 2019	✓				https://events.iitgn.ac.in/2019/digitalhumanities/
2	Center for Digital Humanities, Pune, winter school, 2018	✓				https://cdhpune.com/about/
3	Introduction to Digital Humanities, Dept. of English, Ashoka University, 2020	✓				https://www.ashoka.edu.in/courses
4	Computational Humanities, Centre for Translation and Digital Humanities DHTraC, Ravenshaw University, 2021		✓			https://ravenshawuniversity.ac.in/?page_id=26321
5	Digital Literature and Literatures in the Digital, Dept. of English, Aligarh Muslim University, 2018	✓				https://www.amu.ac.in/department/english
6	Digital Humanities and Cultural, School of Cultural Texts & Records, Jadavpur University, 2013		✓			http://www.granthsouthasia.in/
7	Certificate in Digital Humanities, Dept. of English, Jamia Millia Islamia	✓				https://www.jmi.ac.in/aboutjamia/departments/English/courses-name
8	Diploma in e-Governance, Digital University Kerala, 2020		✓		✓	https://duk.ac.in/school-of-digital-humanities-and-liberal-arts/
9	M.Sc. in DH, IDRP, IIT Jodhpur			✓	✓	https://iitj.ac.in/dh/
10	M.Sc.in Digital Society, IIIT Bangalore			✓		https://www.iiitb.ac.in/academics/masters-programmes/msc-digital-society
11	M. S. by (Research) in DH, HSS, IIT Indore			✓	✓	https://dhlabiitindore.com/
12	M.A in DH at Dept. of HSS, IIT(ISM) Dhanbad, 2023					https://admission.iitism.ac.in/index.php/admission/ma
13	Computational Linguistic at IIIT Hyderabad			✓	✓	https://www.iiit.ac.in/academics/postgraduate/phd/cl/
14	MA (English with Digital Humanities), Christ University			✓		https://lavasa.christuniversity.in/courses/main-campus
15	Introduction to Digital Humanities, Undergraduate programme, Flame University	✓				https://www.flame.edu.in/academics/ug/program-structure/foundation-courses/humanities

16	B. A. Honours (Humanities & Social Sciences), Dept. of Applied Sciences & Humanities, University of Delhi	✓	https://www.cic.du.ac.in/?Study/B.A-Honours-Humanities-Social-Science
17	Techniques of Historical Research and computer Application, Dept. of History, Central University of Tamil Nadu (CUTN)	✓	https://cutn.ac.in/history/
18	Digital Humanities: Tools, Texts and Theory, IIT Indore, GIAN Course, 2016	✓	https://gian.iitkgp.ac.in/ccourses/approvecourses2
19	Digital Literatures and Literatures in the Digital, Aligarh Muslim University, GIAN Course, Online, 2022	✓	https://gian.iitkgp.ac.in//files/brochures/BR1642127206Brochure_GIAN_Siddharth_English_Final_2022.pdf
20	Electronic Literature and Artificial Intelligence (AI): Theory and Practice of Digital Storytelling, Aligarh Muslim University, GIAN Course, Online, 2022	✓	https://gian.iitkgp.ac.in//files/brochures/BR1652159554Gian_Brochure_Rizwan_Sir_Final_1.pdf

ACRONYMS

AI	Artificial Intelligence
ANSI/NISO	National Information Standards Organization
AR & VR	Augmented Reality and Virtual Reality
BHU	Banaras Hindu University
CLIR	Council on Library and Information Resources
CMS	Content Management System
DACS	Data Acquisition and Control System
DLF	Digital Library Federation
DRM	Distributed Resource Management
EAD	Encoded Archival Description
GIS	Geographical Information System
HCI	Human Computer Interaction
HTML	Hypertext Markup Language
ICT	Information and Communication Technology
IGNOU	Indira Gandhi National Open University
IIIT	International Institute of Technology
IIT	Indian Institute of technology
IPR	Intellectual Property Rights
iSchool	Information School (International Organisation over 120 Universities)
LIS	Library and Information Science
MARC	Machine-Readable Cataloguing
METS	Metadata Encoding and Transmission Standard
ML	Machine Learning
MODES	Metadata Object Description Schema
NEP	National Education Policy
NLP	Natural Language Processing
NLTK	Natural Language Toolkit
OAI/PMH	Open Archives Initiative Protocol for Metadata Harvesting
OCR	Optical Character Recognition
Open DOAR	Directory of Open Access Repositories
OS	Operating System
PHP	Hypertext Pre-processor
RDA	Resource Description & Access
ROAR	Registry of Open Access Repositories
SNS	Social Networking Service
SPSS	Statistical Package for Social Sciences
SQL	Structured Query Language
SWAYAM	Study Webs of Active-Learning for Young Aspiring Minds
SWORD	Simple Web-service Offering Repository Deposit
UGC	University Grants Commission
UI & UX	User interface (UI) and User Experience (UX)
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICODE	Universal Character Encoding Standard
XHTM	EXtensible HyperText Markup Language
XML	Extensible Markup Language