



Mapping the Digital Landscape: A Comprehensive Review of Literature in Digital Humanities

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Digital humanities (DH) is the field that relies upon the application of computer technologies for scholarship in the arts and humanities; initially known as humanities computing, the field has evolved significantly over the last three decades. This paper aims to spotlight the predominant emerging trends reflected in the published research in the field of digital humanities. It has shown how various computer technologies have facilitated education, research and training in DH. Its rapid evolution has brought tremendous changes in the functioning of libraries, archives and museums and has promised new job opportunities in the GLAM (Galleries, Libraries, Archives, and Museums) sector, which aims at preserving, accessing, archiving, reconstructing and interpreting the archival and contemporary records. The study has also highlighted the challenges faced by community of digital humanities researchers. The paper may serve as an essential reference for library professionals and specialists in humanities disciplines.

Keywords:- Digital humanities (DH), Digital arts, Digital libraries, Digital pedagogy, GLAM

Introduction

Humanities refer to the study of knowledge concerning human beings and their culture. It includes fields of study that focus on various human activities, including arts, literature, music, dance, theatre, architecture, philosophy, and other expressions of human culture. For the first time, the word "humanities" was used in scholarly writings by Italian scholars studying and reconstructing ancient Italian classics during the European Renaissance period. The word "humanities" has marked a change in the thinking of scholars from the medieval theocentric worldview to the one in which man has become central to all things. The discipline, now called digital humanities (DH), was earlier known by several other names, like humanities computing, literary and linguistic computing, humanist informatics, digital resources in the humanities, and cultural heritage informatics. It deals with the application of digital tools, technologies, new methods and approaches for studying traditional humanities. Computer technologies have completely transformed information production, consumption, and preservation. Now researchers in humanities use

computational techniques for their academic and research endeavors. A prominent feature of digital humanities is that print is no longer a primary mode of production and dissemination of knowledge. The application of digital tools and technologies in the study of humanities introduces new research, production, and teaching methods. Also, it influences the work and duties of the library and archives professionals. Preserving born-digital materials, digitizing information, and providing access to information online have become essential tasks for library professionals after the emergence of digital humanities.

The present paper has traced the history of digital humanities, its scope, limitations, and influence on traditional humanities research and the library and information science field.

History and development of DH

The field of humanities has adopted the rigour, systematic, unambiguous procedures, methodologies, and applications of computing to address the problems and concerns of society and thus evolved to digital humanities.

The origin of DH can be traced back to 1949 when Father Roberto Busa started to make an index verborum of 11 million words of St Thomas Aquinas and related authors, which was published in 1974; the

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lemmatization was done semi-automatically. In 1963, the Centre for Literary and linguistic computation was set up in Cambridge for text analysis of Early Middle High German texts. In 1966, a new journal, *Computers and the Humanities* was launched. The Association for Computers and Humanities was set up in 1978. The Oxford Text Archive was set up in 1976 to maintain electronic texts; DOS-based text analysis programs-world, cruncher, TACT and MicroOCP appeared. The Apple Macintosh, which had Graphical User Interface was helpful for humanities researchers. In 1986, the Standard Generalized Markup language, SGML by ISO, emerged, which could handle different kinds of texts. The TEI (Text Encoding Initiative) Guidelines was published in 1994, which led to many full-text digital library projects. The arrival of the Internet, especially WWW, outstripped the impact of previous milestones. In 1993 the first graphical browser, Mosaic, appeared. In the late 1990s, universities in the UK, USA, and Canada introduced programmes in DH. These developments contributed significantly to the growth of dh and put cultural heritage on the Internet for researchers, lifelong learners, and the public (Hockey, 2004)¹.

Deuff (2018)² has explained the history and evolution of the digital humanities discipline and the methods followed for preserving information from ancient times to the present day. The author has underlined the importance of indexing systems for automatic information processing. The discipline of digital humanities is not a recent activity as discussed by many but has emerged as a consequence.

The discipline of digital humanities has broadened its reach since 1990 onwards, with the beginning of the world wide web and also due to the widespread use of information technology as the field of digital humanities uses information technology to narrate the human past and to provide a better understanding of the human record and also the development and use of information technology (Schreibman, Siemens, and Unsworth, 2004)³.

The main components of DH are curation, archiving, and cultural analytics. Now researchers from humanities and social sciences are encouraged to participate in AI, ML and climate change research. The main funding agencies encourage the researchers to submit interdisciplinary research (Liu and Wang, 2023)⁴. Integrated interdisciplinary research provides a platform for new research connecting the

disciplines, expertise, potential and resources. (Oberbichler et al, 2022)⁵.

Tools and techniques in DH

The evolution of DH shows that the use of computer tools and techniques from the discipline of computer science can help in research in humanities. The deployment of quantum computers may help address complex problems that classical computers cannot solve. Further, the use of quantum computers is cheaper than the use of supercomputers. The experts envisage the development of quantum humanities in the future (Barzen and Leyman, 2020)⁶. Quantum machine-learning techniques can solve real-world problems more accurately than classical machine-learning algorithms. The technology is faster than the computational algorithms but still nascent.

Dongba script is a unique writing system used in Southwest China. The digital tools and technologies of OCR, machine translation and network visualization have been used to study the grammatical aspects of the Dongba pictographic writing system. Xu (2023)⁷ has reported how an online database of Dongba pictographic script may be created using a dictionary of Moso Hieroglyphs. The study has also highlighted the traditional Chinese method and Unicode consortium-defined IDS and IDC used in the Dongba script. The author has used network analysis to assess the Dongba writing system's development stage. The network visualization offers a clear picture of the knowledge graph of a Dongba writing system. Horvath (2023)⁸ has advocated that multilingually accessible digital platforms and tools may help in processing non-Anglophone sources in East Asian studies. Art researchers have to handle a large number of images and examining them is an arduous task. Pfluger, Viehhauser and Tumanoy (2023)⁹ have observed that the art historians, curators, art dealers, and artists use LadeCA.view to describe the exhibition's overview, objectives, contents, and structures: every image need not be examined individually. LadeCA.view is a part of LADECA, a language used to analyze, describe and explore visual art collections. Markopoulos et al. (2020)¹⁰ have highlighted the high cost of acquiring and maintaining artifacts for museums. To address the problem of high cost, they have recommended the implementation of Virtual Reality, avatar technologies, virtual worlds, holograms, and gamification for introducing interactivity in accessing

online museums and libraries. The authors have underlined that the use of strategies and tools of digital culture in DH economics may turn institutions of libraries and museums into revenue-generating bodies.

The concept of immersive technologies was introduced when the immersive human-computer interaction prototype was built (Sutherland, 1964 in Tang *et al.*, 2022)¹¹. Immersive technologies extend users with high quality and quantity of sensory information. Further, it can also be mentioned that immersive technologies blur the lines of demarcation between the physical and virtual worlds by creating or incorporating a sense of immersion. Virtual reality (VR), Augmented reality (AR), Mixed reality (MR), and Extended reality (ER) are examples of immersive technologies which promise to improve learning, education, and practice. Choi and Chun (2021)¹² have highlighted that Augmented Reality may be used as a search interface in DH to extend users' phenomenological and embodied experiences by encouraging them to physically experience heritage sites equipped with historically and critically informed virtual information. The users get an artistic and scholarly understanding of the heritage sites. The AR facilitates storytelling, a blend of physical and digital aspects of heritage sites. The authors have described how AR may be used to communicate information about the heritage site of the Seoul city wall interestingly. The light and sound shows presented to the visitors at the historical forts in India is another example in this regard. The technology may also be used in marketing heritage sites among the general people (Hutson and Olsen, 2021)¹³.

Born digital projects like digital exhibitions, textbooks, monographs, and dynamic visualization greatly help DH in Japan and East Asia studies. Digital content helps in preservation and dissemination, which supports the understanding of textual content.

Chen, Ho and Chang (2022)¹⁴ have developed a Hierarchical Topic Analysis Tool (HTAT) on the basis of hierarchical Latent Dirichlet allocation (hLDA) to facilitate DH research on the DH platform for Lo Chia-Lun's Writings (DHP-LCLW). The tool HTAT may help the researchers understand, through visualization the hierarchy of topics and how they have evolved with time.

Digital Humanities and pedagogy

Several authors have also dwelt on the changes that have occurred with the introduction of digital techniques in pedagogy. The tools, techniques and resources of DH can be used for facilitating learning in classrooms (Battershill and Ross, 2017)¹⁵. The special issue of a journal on DH pedagogy (2014) has advocated teaching DH skills to graduate students in humanities, especially in the literature field (CEA Critic, 2014).¹⁶ Iantorno¹⁷ has observed that most English literature faculty are not familiar with the field of digital humanities. The author has surveyed various initiatives societies and projects take to incorporate DH in the classroom. It mentions that the researchers should know more about digital humanities instructions and their practical applications in creating necessary tools and multimedia archives. Bonds¹⁸, in her overview of digital humanities pedagogy, reviewed the scholarship on digital humanities pedagogy and provided additional resources for those interested in incorporating digital humanities in literature courses. She stressed on the need for an increased presence of DH pedagogy in English departments and explained the benefits of teaching students collaborative digital scholarship. Nørgård, Schreibman, and Huang (2022)¹⁹ have recommended a new model where the DH is considered a hybrid mode of education. The development of hybrid DH education needs to be practiced by the public. This can be achieved by connecting the dots of hybrid education, DH, and society.

Shillingsburg²⁰ says that digitization is a fundamental component of scholarly work in DH and recommends that scholars interested in digitization should consider all transformations a text can experience after digitization. The work highlights the best digitization practices for scholarly projects and provides valuable information for teachers interested in introducing digital textuality to students. The digitization of literary texts, poets, drama, and fiction treated as works of art is more important than cultural documents. The author says that the standards of accuracy and precision in using literary text as art differ from those of cultural documents or texts for linguistic analysis. Another collaborative project is the Digital Literary Map of Japan, supported by Heidelberg University, the National Institute of Japanese Literature and Osaka University. The paper focuses on spatial humanities and literature by

annotating poetic places in premodern Japanese written documents. The project, *Bodies and Structures: Deep Mapping Modern East Asian History*, combines spatial and historical considerations with pedagogical purposes. The project has an interactive map function, a list of modules, visualized tag index, grid visualization, and a geotagged map. The DH in Japanese Studies has used technology in sync with language characteristics to build open databases and visual collection and engage in critical analysis for teaching purposes (McDonald and Ambaras, 2021)²¹

Digital Humanities and academic libraries

The role of academic libraries in the digital humanities has also received the attention of scholars. Libraries play a key role in providing necessary information for academic research. White and Gilbert (2016)²² have attempted to highlight the importance of libraries, archives, and museums in creating and maintaining infrastructures required for humanities computing and their role in making learning possible through digital humanities techniques. They highlight that the domain of libraries and archives is most suitable and compatible for the spread of digital humanities scholarship.

Munoz²³, while stressing on the role of librarians in digital humanities research, argues for the inclusion of activities related to digital humanities research into the core functions of library professionals. He also stresses that there are substantial benefits in academics if librarians are encouraged to participate in academic inquiry and suggest that librarians should become full and equal collaborators in all academic activities offered in the digital humanities scholarship. Baker, J.²⁴ compares the basic functions of the libraries and archives, i.e., collecting, cataloging, and preservation, with the activities involved in digital humanities scholarship and concludes that the duties of both traditional librarians and digital humanities specialists are the same. While appreciating the tasks of the library professionals, he commented that the tasks of compilation and description of historical records performed by library professionals using digital tools and techniques provide scholars with source material for new research methods of inquiry.

Battle and others²⁵, while discussing the digital history initiatives taken up by the College of Charleston, attempt to offer a research design for digital repositories and libraries that are trying to look

into the existing gaps in their collections. They suggest that a meticulous curation and compilation of professional digital exhibits by the libraries will help the researchers identify the existing histories and carry out further research on the subject to fill the gaps in the collections in libraries and archives. Kotch²⁶ narrates that the experiences of a generation of digital humanities researchers helped a library at the University of North Carolina to design the data and provide easy access to the collections of oral history materials related to the Long Woman's movement. Melton²⁷ and others in their essay on digital publishing initiatives, discuss the role of library administrators in reallocating available resources within the organizations to cater to the needs of the digital humanities scholarship.

Munoz (2016)²³ felt that most library professionals look at digital humanities as external to the basic duties of the library. The author suggests that library administrators should include activities related to the promotion of digital humanities scholarship in the activities of the libraries. Munoz discusses the initiatives some prominent library schools and professionals took to introduce digital tools and techniques in teaching and research. Yao and Xiao (2022)²⁸ conducted a semi-structured interview of eight librarians from four different universities to understand their perception of DH pedagogy and their understanding of the responsibilities of DH librarians. DH librarian can be considered a connector between the stakeholders, and DH pedagogy must be supported with practical skills.

Digital Humanities and digital archiving

The emergence of new technologies and the application of computing in the humanities has also brought significant changes in the work of archivists. Archivists use new techniques and preservation methods to preserve and disseminate archival information more efficiently than hitherto. on the techniques involved in digital curation and dissemination of digital records. Sabharwal²⁹ has discussed the role played by digital repositories, museums, and exhibitions in preserving and disseminating information electronically. Scholars also produced works on several problems humanists/humanities professionals faced in utilizing digitized and born-digital materials. Some other experts stress the importance of linked data or metadata in digitization projects and how it helps the researcher

find and utilize digital materials. Hawkins (2021)³⁰ has observed that due to a lack of a proper digitization approach, an enormous volume of archival data available in digital form is being under-utilized. The author highlights major barriers preventing the humanities professionals from utilizing the benefits of digitization of archival information and suggests that proper implementation of archival projects with collaboration between the disciplines of humanities and computing; and the incorporation of AI and low-barrier tools in the digitization workflow would help in increasing access and proper utilization of digitized and born-digital archives. The linked data facilitates easy access to music content on the World Wide Web. Egan (2023)³¹ has spotlighted Linked Jazz (linkedjazz.org) project, which uses linked open data technologies for digital heritage materials. The author has elaborated how an extensive ontology, LITMUS (Linked Irish Traditional Music) can be used for the Irish Traditional Music Archive (ITMA), Dublin. The author has also described the use of ontology in the project of Connections in Sound.

Digital libraries can serve as a useful platform for maintaining datasets and facilitating research in DH. Mi, Bernardy and Schmidt (2021)³² have highlighted how the library at the University of South Florida in collaboration with the DH research facility, has extended the accessibility and discoverability of archaeological datasets. Folie (2021)³³ has highlighted how Wikipedia's Internet Archives and History page may be used in humanities to study the evolution of different literary genres. The author has spotlighted how Checklist, a genre of literature focusing on young women, has developed through the different stages as reflected through the Wayback Machine of Internet Archives and the History Page of Wikipedia. The Internet Archives is a nonprofit library of free books, movies, software, music, and websites. Its Wayback Machine service was launched in 2001 and enabled users to access websites, their contents which no longer exist. The author has emphasized that archived web resources should be used for studying literary genres and other concepts in humanities.

The Archived web gives a significant digital footprint by recording social media activity and news from media outlets and government websites. As a result, Web archiving is being focused upon by researchers, policymakers, and institutions engaged in preserving cultural material. The value of web archives as data sources for (digital) historians

conducting historical research has been well accepted. Although the World Wide Web is changing quickly, as are internet users' habits and activities, heritage organizations and scholars still find it difficult to be at pace with them. Social media archiving (SMA) is still in its infancy, with several countries beginning experimental archiving programmes, while several state agencies have established a national framework to archive web pages (Vlassenroot, 2021)³⁴. Their study has focused on the current, legal, technical, and operational aspects of archiving social media content. It has highlighted that proper use of metadata and data management plans are required to effectively organize and archive social media data. For novice users and academics, there is a critical need for provenance metadata at various levels for archived web content. Application Programming Interfaces can offer this metadata in the context of social media (APIs).

Critiquing the digital humanities

Criticism of Digital Humanities has also received much attention in the works of scholars. The criticism is mainly related to its approach towards the issues of race and gender and also discusses that due to over-emphasis on the method in which the researcher completely depends on the electronic tools and techniques to analyze and shape the data. Clement (2016)³⁵ has highlighted the methodologies of social sciences and argued that digital humanities do not employ the qualitative methods of data gathering such as survey research, observations, and interviews and the absence of these methods indicates that Digital Humanities is still not clear where such methods might fit within the epistemological landscape of the humanities. The study discusses the methodological perspectives employed in the study of information systems in the disciplines of social sciences and digital humanities to suggest bridges not only between the subjects of social sciences and newly emerging digital humanities but also between digital and traditional humanities.

Some scholars felt that digital humanities practitioners failed to meet the needs and requirements of the community of differently-abled persons. George H. Williams argued that though scholars have developed several standards for the creation, organization, and preservation of digital information for the use of the next generations of teachers, scholars, and librarians, they have neglected the needs of the people with disabilities and due to

this, valuable digital information has become inaccessible to the people with disability (Williams, 2012)³⁶. Focusing on the word “universal design,” the author quotes Mace³⁷, who said that the universal design should focus on providing accessibility to people who are disabled and ensure that all barriers to access should be removed. If the principle of universal design is applied to digital resources, then the resources should be compatible with multiple devices. Emphasizing the necessity for making digital information accessible to people with disabilities, the author highlights specific projects that the digital humanities community should undertake to improve the accessibility of the resources created to benefit people with disabilities. The paper also discussed the accessibility tools for content management systems, format translation tools, and tools for crowdsourced captions, subtitles, and transcripts. The author feels that the community of people with disabilities will benefit greatly if the digital humanities specialists take up projects discussed in the present paper and adapt universal design principles as a major principle for creating and providing access to information. The principle of universal design further helps to understand the requirements of persons with disability and leads professionals to invent new devices with new features. Discussing the term “Screen essentialism” coined by Nick Montfort, the author informs that the screen of the computer is not necessary in all cases of interaction with the computers. As an example, the author points out that computer users who are completely blind have no use of the computer screen as they use screen reading software or digital books for accessing information. Pirrone and Galletta (2022)³⁸ examined the support of DH for the cultural accessibility of people with disabilities. A systematic review of DH was conducted to explore cultural innovations with a survey on the availability of technologies. The study selected the literature on DH and disability published from 2018 to 2022 from the Scopus and Web of Science (WoS) databases.

Pratono et al. (2020)³⁹ have studied how 5 different social enterprises have adopted crowdfunding for DH projects in Indonesia. The authors have used an interpretative approach by interviewing the people associated with crowdfunding for financing the DH projects. The study has highlighted that the crowdfunding platform motivates social enterprises to reshape social missions and share the risk with the

stakeholders who work on the social impact of DH projects. Crowdfunding encourages social enterprises to hire professionals who attract donors and investors for DH projects.

Wendy Hui Kyong Chun and others in their “the dark side of the digital humanities” felt that the rise of digital humanities would lead to the creation of two sections of the academics, the “haves” of digital humanities with higher funding on one side and the “have nots” of mainstream humanities with less funding facilities on the other side. They have also disagreed with the idea that the digital humanities would make the discipline of humanities and its graduates more relevant to society by providing technical skills to the humanities graduates and would help them to increase their opportunities in the job market. The authors have argued that knowing GIS or basic scripting will not make the English majors compete with the engineers (Chun et al., 2016)⁴⁰.

Digital Humanities initiatives in India

The project Madurai (<https://www.projectmadurai.org/>), a collection of Tamil Classics and Bichitra, a digital variorum of Tagore’s work (http://bichitra.jdvu.ac.in/about_bichitra_project.php) have led to the emergence of DH in the country. Certain challenges prevent the smooth execution of DH projects in India, like a lack of physical and computational infrastructure. The non-availability of DH labs, pedagogy, digital tools and software and lack of institutional support (Shanmugapriya and Menon, 2020)⁴¹.

Many universities and institutions like Jadavpur university, Koti Women’s college, Srishti Institute of Arts and Design and Technology, Presidency University and some IITs offer courses in DH ranging from Degrees to Master’s. Efforts are being made to create and develop digital archives and focus on future studies, game studies and cultural heritage. The jury is still out on what constitutes the DH field in India. The importance of local context and culture must be heeded to DH practices in the country. Murray and Hand (2015)⁴² have described a prototype videogame, “Meghdoot,” as a knowledge object for storytelling in contemporary India. The authors have also compared jugaad or fungal engineering with DIY culture and underlined how local factors or variations might impact the understanding of India.

Digitize India (<https://www.meity.gov.in/content/digitize-india-platform-dip>) and Digital India

(<https://digitalindiaportal.co.in/>) facilitate many large scale projects in digitizing DL curation and preservation. DH requires high resources, funds, and technology, which is impossible for small colleges. The initiatives taken by Govt of India, like Digital India, and DIP (Digitize India Platform) to digitize physical records in government departments, will certainly enhance the DH field. DHARTI (Digital Humanities Alliance for Research and Teaching Innovations) (<https://dhdharti.in/about/>) is an initiative to promote and support digital practices in arts and humanities scholarship.

Shanmugapriya and Menon (2020)⁴¹ surveyed 50 university programmes for their syllabi. Very few offer DH as a programme, but courses like History, Economics- Computer Application and History-Political Science and Computer Application under computer science programmes are more in number.

Impact of DH on GLAM sector

Every country's GLAM (Galleries, Libraries, Archives, and Museums) sector contributes significantly to preserving and protecting that country's cultural treasures. For a better and more sustainable future, it is crucial to preserve old knowledge, and the GLAM sector is best qualified to carry out this mission (Kushwaha and Singh, 2020)⁴³. Bekele *et al.* (2018)⁴⁴ have emphasized that communication and sharing cultural heritage knowledge are very important. Technology implementation plays a pivotal role in preserving, diffusing and using knowledge about cultural heritage. The technology enables digital accessibility of cultural heritage. The authors explain that VR, AR, and MR may be used to maintain and facilitate cultural heritage understanding. The study advocates that interactive interfaces should be developed for cultural heritage. Digital cultural heritage entails converting classical aspects of heritage, unique resources of human knowledge and expressions into digital content such as texts, databases and images. Other strategies have emerged, such as labs within GLAM institutions, which makes it easier to embrace inventive solutions for content distribution and user interaction (Candela *et al.*, 2020)⁴⁵. The evolution of DH also led to the creation of more employment opportunities in the GLAM sector. Library and information science professionals must have sound knowledge of emerging tools and technologies and how to use them to provide innovative services, digital web services, archival services, etc. The

GLAM sector, which preserves and promotes cultural heritage, can use technologies and tools of DH to facilitate people to interact more with culture and cultural sites. This will be a learning and entertaining experience for all (Lo *et al.*, 2019)⁴⁶. The computational tools of Java and Python can help with qualitative and quantitative analysis in humanities and Social Sciences. The NLP tools can be used for checking data (Franzosi, Dong and Dong, 2022)⁴⁷. The library science programmes have started including courses on DH with components of NLP, data mining, text extraction, ontology semantics, syntax, data ethics, algorithm bias, digital and print resources. The advancement of archival science and the full exploitation of archives have significantly benefited from the development of the digital humanities as a new multidisciplinary research paradigm (Su *et al.*, 2023)⁴⁸. The new designations like Digital Librarian, Digital Humanities and Instruction Librarian, Digital and Physical Records Archivist, and Digital content Management Archivist for institutional collections (ALA, 2023)⁴⁹ emerged in the GLAM sector. Digital Health Humanities Program coordinators have already come up in other countries. It is the need of the hour to incorporate DH in LIS education in India.

Challenges for Researchers

Gold (2012)⁵⁰ has focused on how access to DH resources varies with race, gender and disability. Liu and Wang (2023)⁴ have observed the challenges of dwindling funds, student enrolment and faculty appointments in universities. It is tough to prove a return on investment in humanities compared to STEM fields; as a result, it is difficult to get funds for dh projects, but efforts are being made to incorporate DH with STEM fields.

The researchers must be well versed in using command line interfaces, coding, and other techniques of computational humanities. Social scientists or humanists have problems accessing web archives comprising huge data, images, and unintelligible metadata and provenance. Ruest *et al.* (2021)⁵¹ have described the interface design and architecture of the Archives Unleashed Cloud. Their study recommends a cloud-based service for the researchers to evaluate and analyze the archival data on a large scale. Nielsen (2021)⁵² has explained how archived data analysis can help write web history. The author has spotlighted Web beacon, tracking

technology, and its use on the national Danish web from 2006 to 2015. The study has used mixed method design-combined large space quantitative mapping and qualitatively studied websites.

Brugger (2021)⁵³ has underscored that the collection of web archives must be made available as data instead of the page-per-page viewing feature of the Wayback Machine of the Internet Archives. At present, most web archives offer limited access to their data collections. Further, combining metadata and hyperlink data may highlight the overall structure of a web domain. Ayala (2021)⁵⁴ has explored the expectations and requirements of researchers and the actual web archiving procedures. The current technology enables the creation of black box websites which are difficult to understand, archive, and study. Web archivists must understand that everything from a website cannot be archived and researchers cannot study all. Archivists must create meticulous documentation for web archiving. The author has highlighted Archive-It, a web archiving fee-based service of the Internet Archives. It allows subscribers to collect, preserve and access born-digital content from the web and archive them without installing any software.

Ogden and Marmura (2021)⁵⁵ have described the social, technological and organizational limitations of web archiving. The authors have studied UK Web Archive at the British Library and the Net Archives at the Royal Danish Library. They have stressed that research programmes, datathons, and workshops must be organized for Digital Humanities researchers. The curators must interact with researchers to understand their viewpoints. Web archives have tremendous potential, which must be tapped for researchers of DH. The core values must be developed, promoted, and adopted for proper web archiving. Further, the basics of good governance will ensure sustainability, accountability, and inclusiveness in archiving content related to cultural heritage institutions. There should be a constant dialogue with the stakeholders of web archives to improve and promote them (Schafer and Winter 2021)⁵⁶.

The enormous amount of data is organized and archived by Internet Archive, common crawl and national libraries across the globe. Nevertheless, the problem is that historians need to know how to use these archives for research purposes. The research and scholarship in DH may contribute to the overall development of humanities and comparative literature studies, with data-based empiricism in particular. (Peng, 2020)⁵⁷.

Conclusion

The paper has highlighted the developments and components of DH, like digital curation, archiving, and cultural analytics, as well as different challenges in the field. Digital tools and new technologies also facilitate digitization and encoding processes, with reduced costs for creating and maintaining databases while maintaining the educational value of the intact. The students and researchers who study the new programs offered as part of digital humanities will be able to work not only in academic institutions but also find employment in the publishing industry and create new tools for education and multimedia development. Since the beginning, digital humanities has resembled its quest for imagination and innovation in the humanities field without compromising on core scholarly standards. With the emergence of the internet, especially WWW, as a predominant characteristic of everyday human life, it offers more possibilities for the humanities computing to reach out to wider groups and individuals. Further research needs to be done to determine how university libraries are extending services in DH.

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