

Digital Humanities in Humanities and Social Sciences: Towards an Innovative Approach to Education and Research

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Abstract

This article delves into the landscape of Digital Humanities (DH) within the realm of Social Sciences and Humanities (SSH) in Africa, emphasizing innovative perspectives for Higher Education and Research. The study is grounded in comprehensive surveys conducted with over 70 participants, including students, researchers, and ministerial representatives, aiming to assess the perception and utilization of digital tools in these domains.

The situational analysis reveals a diversity of approaches and attitudes towards Digital Humanities within the African academic community. While awareness of the benefits of digital technologies in Social Sciences and Humanities is growing, noticeable disparities emerge, illustrating intergenerational tensions regarding the adoption of these novel methodologies.

The materials and methods employed in the surveys involved detailed questionnaires, in-depth interviews, and documentary analyses. Results suggest that, despite a growing recognition of Digital Humanities as catalysts for pedagogical innovation and research, significant obstacles persist. Infrastructure problems, notably limited internet access and insufficient equipment, remain major challenges, hindering the full integration of Digital Humanities in higher education.

The challenges of Digital Humanities in the African context are underscored, highlighting the need for tailored solutions and strategic investments to overcome these obstacles. Despite progress, this study emphasizes the crucial importance of addressing intergenerational issues and investing in digital infrastructure to ensure the benefits of Digital Humanities can be fully realized in the African higher education landscape. Consequently, the article advocates for a holistic and collaborative approach, engaging the entire academic community and governmental stakeholders to catalyze the necessary transformation towards a more inclusive and innovative digital

Keywords : *digital humanities, education, research, innovation*

INTRODUCTION

Within the academic landscape of Human and Social Sciences, the emergence of Digital Humanities has brought about a significant transformation, redefining the paradigms of teaching and research. Indeed, it is imperative to comprehend the implications of this convergence between digital technology and traditional disciplines, taking into account the specificities and opportunities inherent in global contexts, with a particular mention of the situation in African countries.

Africa, as a continent with diverse cultural, linguistic, and historical realities, experiences a unique dynamic in the adoption of Digital Humanities. Higher education in Africa, despite being characterized by a rich diversity of disciplines, often faces challenges in accessing advanced technological resources. In this context, can Digital Humanities offer a transformative platform by opening new perspectives for education and research?

Digital Humanities are defined as an interdisciplinary field at the intersection of traditional humanities and information technologies. They emphasize the importance of exploring and applying computer methods in humanities research, highlighting the use of digital technologies to analyze, interpret, and represent data and texts (Julia Flanders, 2012)¹. This represents a convergence of the two main domains, showcasing the use of computer tools and methods to explore, analyze, and understand humanistic questions (Willard McCarty, 2004).

¹ In, A Companion to Digital Literary Studies, 2009

This leads us to the mobilization of digital technologies for the creation, analysis, and dissemination of knowledge in the fields of Human and Social Sciences (Ray Siemens and Susan Schreibman, 2009).

This intersection between humanities and information technologies opens new perspectives for understanding and communicating knowledge in these disciplines. These definitions highlight the collaborative and exploratory nature of Digital Humanities, emphasizing the crucial role of digital technologies in advancing research in humanities, and even in the field of education and research, hence the necessity of shedding light on the subject.

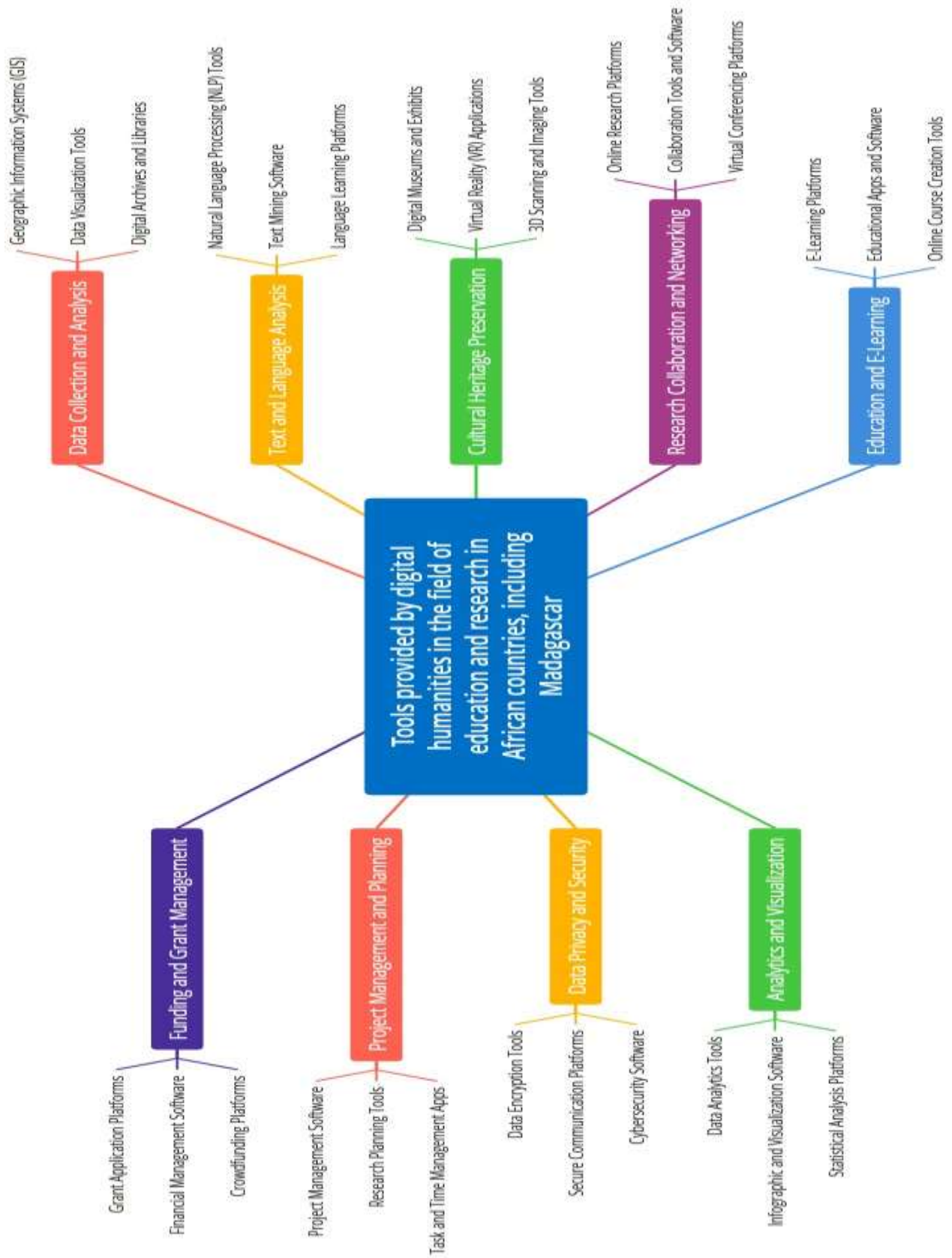
Contextualization: Tools Offered by Digital Humanities in the Field of Education and Research in African Countries, Including Madagascar

Digital Humanities provide African countries with a range of innovative tools that profoundly transform teaching and research practices in the field of Human and Social Sciences. The digitization of archives and historical documents, for example, facilitates access to cultural resources and contributes to heritage preservation. However, financial challenges and unequal access to these technologies can create disparities. Online education platforms expand access to higher education, particularly relevant in geographically extensive contexts. Still, internet connectivity issues and the need for equitable distance assessment pose challenges.

Additionally, collaborative mapping, documenting local knowledge, promotes community participation. Nevertheless, it requires technological skills and local awareness to ensure accurate representation. Not to mention the use of Natural Language Processing (NLP) for African languages, supporting linguistic diversity but facing the challenge of integrating this diversity into existing technologies.

Furthermore, oral archiving and digital storytelling preserve collective memory but demand technical skills for collection and raise ethical questions. Finally, virtual international collaboration, while encouraging diverse perspectives, encounters linguistic barriers and disparities in access to technologies. Despite these challenges, the judicious integration of these tools can stimulate positive change, promoting more inclusive teaching and research tailored to African specificities.

In the diagram below, we observe the few tools accessible to stakeholders in the field of education and research in African countries, including Madagascar. However, as we have often emphasized, the use of these tools presents numerous barriers—not only in terms of materials or infrastructure but also concerning perceptions, the level of digital literacy, and apprehension regarding the confidentiality or relevance of data.



MATERIALS

Methodological Complexity in Digital Humanities

Given the relatively unexplored nature of this subject in African countries, an exhaustive analysis of previous works in Human and Social Sciences by Western predecessors was necessary to establish a robust conceptual framework. This literature review facilitated the mapping of trends, key concepts, and existing gaps in understanding the relationships between individuals and Digital Humanities. However, such an activity remains insufficient in this type of subject, necessitating the researcher to conduct ethnographic case studies within specific communities, allowing for a deep immersion into daily practices and individuals' experiences with digital technologies. Participant observation and semi-structured interviews were favored to capture the richness of contextual data. Furthermore, quantitative surveys, semi-structured interviews, and exploration of those conducted by foreign research institutes were solicited to provide a more effective understanding of the situation, primarily aiming to gather high-quality data.

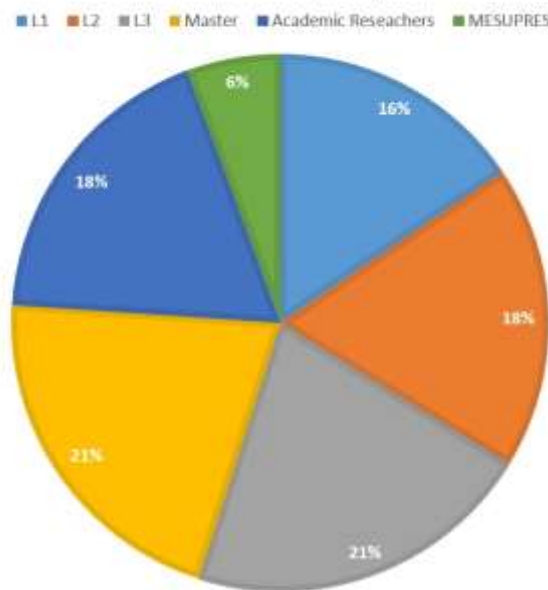
Surveys and Interviews

As specified, the study on Digital Humanities in Human and Social Sciences, particularly in the case of Madagascar, employed a comprehensive methodological approach. Surveys were conducted among a diverse sample of over 70 participants, including students, teachers, researchers, and ministerial representatives. This approach aimed to gain an in-depth understanding of perceptions and practices related to Digital Humanities in the Malagasy context, with the intention of generalizing to other African countries where situations might be comparable to those in Madagascar.

The diversity of participants was carefully considered, encompassing individuals from different generations (X, Y, Z, Alpha), genders, geographical origins (major cities in the country and peripheral universities), and affiliations with both private and public higher education institutions. This intentional variety allowed for a holistic representation of attitudes and experiences with Digital Humanities, taking into account nuances related to cultural and institutional diversity.

Regarding the implementation of these surveys, it is important to emphasize that we utilized materials comprising detailed questionnaires designed to probe individual perceptions and practices related to digital tools in Human and Social Sciences.

SURVEYS ON DIGITAL HUMANITIES IN THE FIELD OF EDUCATION AND RESEARCH (2023)



Title : surveys on digital humanities in education

Methods

Rationale for Sample Selection Criteria

Criterion 1: Educational Level (Bachelor's, Master's, Ph.D.):** The needs and expectations regarding Digital Humanities may evolve based on the level of education. Exploring these differences allows for better tailoring of recommendations according to the educational cycle.

Criterion 2: Gender: Gender differences can influence the perception and adoption of Digital Humanities. Ensuring a balanced representation helps avoid gender-related biases and understand specific dynamics.

Criterion 3: Generation: Generational diversity is crucial for understanding intergenerational tensions related to the adoption of Digital Humanities. Attitudes and digital skills can vary significantly among different generations of students and researchers.

Criterion 4: Academic Discipline: Digital Humanities may have specific applications within the fields of Human and Social Sciences. Including participants from different disciplines provides a holistic perspective on how Digital Humanities are integrated into teaching.

Criterion 5: Type of Institution (Public or Private): Available resources and pedagogical approaches may differ between public and private institutions. This distinction captures contextual nuances related to the use of Digital Humanities in varied educational settings.

Criterion 6: Geographic Area: Socio-economic contexts and digital infrastructures can vary considerably by geographical region. Including participants from different regions accounts for these disparities.

Criterion 7: Prior Experience with Digital Humanities: Including participants with varying levels of prior experience with Digital Humanities offers perspectives on perceived obstacles and opportunities based on familiarity with these tools.

Criterion 8: Involvement in Research: Researchers actively engaged in research may have different perspectives than those primarily focused on teaching. Including participants involved in research provides a more comprehensive understanding of issues related to Digital Humanities.

The participant selection strategy was rigorously developed to ensure balanced representativity. Surveys included individuals from different generations, recognizing the importance of intergenerational tensions. Additionally, diversification of geographic areas and types of institutions considered regional and institutional disparities, thereby enriching the relevance of the results.

| Population | Tranche d'âge | Genre | Zone | Type d'institution | Discipline académique |
|-------------------------|---------------|-----------|------------------|--|-----------------------|
| L1 | 18 - 21 | 4 M, 7 F | 25% Antananarivo | Publics and privates universities | SHS |
| L2 | 20 - 24 | 5 M, 8 F | 15% Fianarantsoa | | |
| L3 | 21 - 26 | 5 M, 10 F | 25% Grand Nord | | |
| Master | 23 - 30 | 3 M, 12 F | 30% Grand Est | | |
| Academic Researchers | 33 - 60 | 2 M, 11 F | 5% Toliara | | |
| MESUPRES | 36 - 50 | 1 M, 3 F | Antananarivo | Ministry of Higher Education and Scientific Research | |

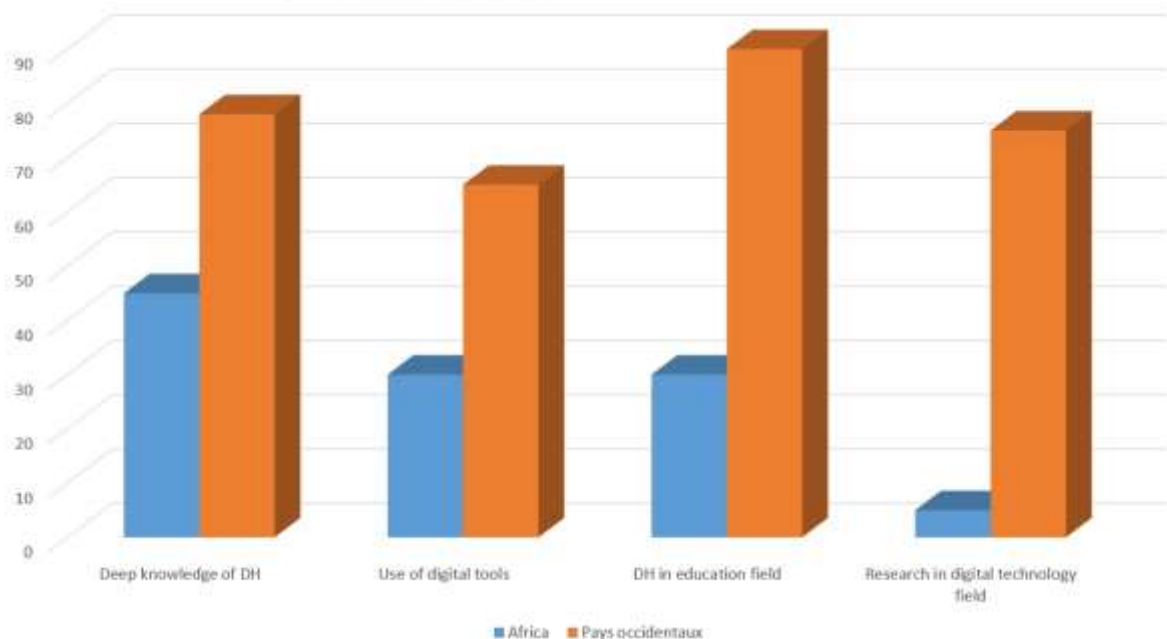
RESULTS 1: The Reality of Digital Humanities Perception Among African Researchers (vs international Researchers)

In the context of globalization, characterized by the increasing mobilization of advanced technological tools for information exchange and processing, Digital Humanities now occupy a prominent place in research and its methodologies. Notably, the stakes of Digital Humanities extend beyond scientific or academic domains, encompassing aspects of cultural studies, social sciences, anthropology, and more.

The perception of this field in Africa remains relatively unexplored. To provide a general overview of the situation, surveys were conducted by various institutions among researchers, educators, and professionals in Human and Social Sciences in both Africa and Western countries. Results from these surveys reveal that only 45% of African participants claimed to have an in-depth knowledge of the domain, contrasting with 78% in Western countries. Furthermore, African respondents admit to less frequent use of digital tools in their research compared to their Western counterparts: 30% versus 65%. Importantly, the surveys explicitly revealed a lack of international collaboration between Western and African researchers, reducing the involvement of Digital Humanities in international and transnational projects. These findings paint a concerning picture of the researcher's stance in our current era, emphasizing the pressing need to enhance researchers' capacities in perceiving technological processes not as adversaries but as major allies.

Other key indicators inform us that the significant disparity in the adoption of digital technologies between Africa and Western countries goes beyond these observations. According to data from the International Telecommunication Union (ITU, 2023), internet penetration in Africa is significantly lower than in Western countries, directly impacting access to digital resources. Concerning the teaching of Digital Humanities in universities, a thorough analysis of educational programs in the humanities reveals notable differences. In Africa, the presence of Digital Humanities in curricula remains limited, while in Western countries, they are increasingly integrated. UNESCO data (2022) indicates that only 30% of African universities actively incorporate Digital Humanities into their programs (explaining the aforementioned statistics). What is particularly striking is the quantity of research in the field of humanities and Digital Humanities. According to SCOPUS (2023), Western countries dominate the research scene, representing nearly 75% of global publications, while Africa contributes to less than 5%. However, observations regarding access to infrastructure and resources necessary for the practice of Digital Humanities cannot be overlooked. World Bank data (2022) indicates disparities in access to electricity and technological infrastructure, directly affecting Africa's capacity to fully embrace Digital Humanities.

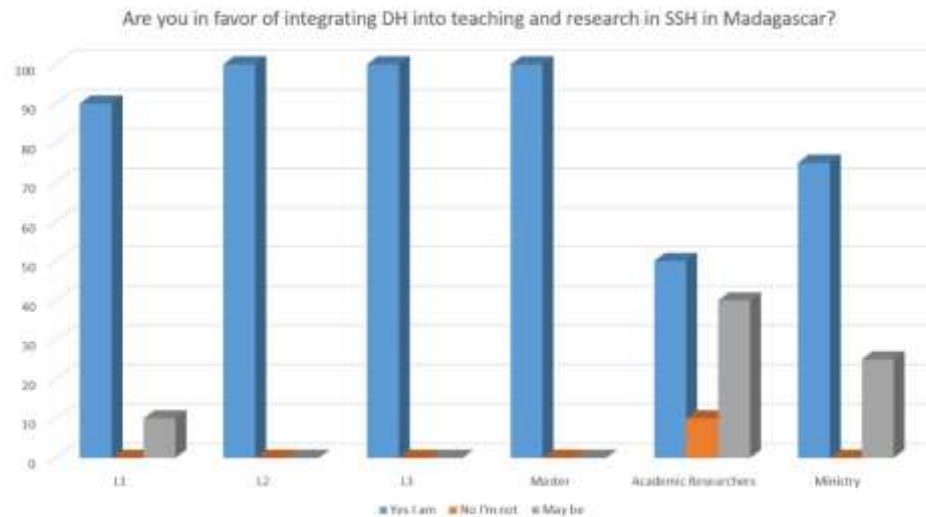
Digital Humanities: african countries vs international countries



RESULTS 2: Qualitative Data Insights from Sample Surveys

I. Teaching and Research in the Face of Digital Humanities

In Western countries, Digital Humanities serve as a pivotal lever for teaching in the field of Human and Social Sciences. However, in Madagascar, based on our conducted research, it has become evident that not all stakeholders in the field necessarily share the same views on this matter.



According to this schema, students in the 1st – 3rd year - Master (Generations Z and Alpha) exhibit an increased interest in Digital Humanities, highlighting a natural affinity with digital tools. In contrast, the surveyed teachers, researchers, and ministerial representatives (Generations X and Y) demonstrate a relative reluctance towards this new approach, illustrating perceptible intergenerational tensions in the adoption of Digital Humanities.

Why do we observe this intergenerational perception gap towards Digital Humanities in the field of education?

Our literature reviews, data exploitation from various research centers, and references in our personal surveys revealed that the increasing immersion in the digital world has inevitably led to cultural, sociological, cognitive transformations, especially in the realm of information retrieval, and interpersonal or collective exchanges. This has generated rather evident intergenerational conflicts.

Firstly, we address how different generations engage with digital technologies, emphasizing variations in adoption, adaptation, and understanding of these tools based on age. Divergent perceptions between generations, often attributable to distinct life experiences, create fertile ground for the emergence of issues. These tensions are particularly evident in the domains of work and social interactions but especially in education (the primary focus of our study). Indeed, concerning teaching and research, older generations (Generation X and Y) may perceive new technologies as disruptors of traditional learning processes, while younger generations (Generation Z and Alpha) embrace these tools as facilitators of information access and skill development.

These disparities influence educational policies and pedagogical practices, generating debates around the balance between the use of digital resources and conventional teaching methods. Meanwhile, in the professional world, generational differences manifest in attitudes towards remote work, virtual communication, and task automation. Older workers may perceive these changes as threats to job stability and work quality, whereas younger generations view these developments as opportunities for innovation and flexibility.

II. Digital Humanities: Facilitating Access, Processing, and Sharing of Information in Pedagogical Activities

In our surveys, all stakeholders unanimously agreed that digital tools significantly facilitate the completion of various academic tasks. However, as mentioned earlier, certain categories of stakeholders, including teacher-researchers and ministerial representatives, are not particularly convinced of the importance of Digital Humanities in teaching and research. Their reservations are attributed to issues related to relevance, insufficient training, or resistance to change in the traditional approach of Human and Social Sciences. However, international researchers proclaim that one of the major challenges in Digital Humanities lies undoubtedly in the pedagogical transformation they enable.

The integration of digital tools into educational programs provides students with enriching opportunities for exploration and analysis, fostering the development of critical and technological skills (a fact that experienced a striking emergence during the COVID-19 pandemic). For example, interactive platforms allow collaborative study of text corpora, providing a more dynamic and engaging learning experience.

The challenges of Digital Humanities in teaching and research in Human and Social Sciences are identified in the redefinition of methodologies, improvement of knowledge accessibility, integration of technological tools in teaching, and sustainable management of digital data. These challenges, though complex, open promising perspectives for significant progress in understanding cultural, historical, and social phenomena in the digital age.

Consider, for instance, how Digital Humanities contribute to the creation of educational resources accessible to a wide audience. The digitization of archives, online publication of critical editions, and the design of online learning modules broaden access to knowledge in the humanities. This accessibility reinforces inclusion in education, transcending geographical and socio-economic barriers.

In the context of research in Human and Social Sciences, Digital Humanities raise fundamental issues related to the evolution of methodologies and the exploitation of vast volumes of available data. The use of massive data analysis techniques, such as text mining, allows the identification of trends and complex relationships within monumental corpora. For example, researchers can apply network analysis algorithms to map cultural interactions over time.

Another key challenge concerns the preservation and management of digital data. With the proliferation of digital research projects, the sustainability and long-term accessibility of data become crucial. Establishing preservation and sharing standards, along with the development of dedicated platforms, is indispensable to ensure the longevity of research results.

In summary, concerning education, the integration of digital tools offers unparalleled opportunities for student engagement and knowledge transmission. Cutting-edge technologies enable interactive pedagogy, encouraging active learner participation and fostering the development of essential critical, analytical, and technical skills. Traditional teaching methods, contrary to what past generations (X and Y) might suggest, are enriched by the judicious use of digital resources, creating a stimulating educational environment tailored to contemporary requirements. Therefore, it is not a matter of forgetting or subtracting these old methods from educational programs but rather adjusting them to the digital age.

III. Concrete Impacts of Digital Humanities

Digital Humanities have significantly transformed the approach to textual analysis in academic research. Similar to the use of text data mining tools, enabling researchers to quickly and efficiently explore vast text corpora, identifying patterns, themes, and complex semantic relationships. The application of these methods has revolutionized how researchers approach literature, history, and other fields, facilitating the identification of emerging trends and the discovery of new avenues for investigation. Notably, Digital Humanities have introduced innovative approaches in the analysis of social networks as a window into cultural and social interactions. Digital mapping of social networks allows visualization and analysis of connections between individuals, institutions, and ideas. For instance, in the field of social history, this methodology has reconstructed networks of intellectual exchange within communities, revealing influences and collaborations that might have eluded traditional methods. Another revolutionary aspect in the research approach in the Humanities and Social

Sciences is certainly online editing projects. Indeed, it is an initiative that makes access to almost unfindable documents more effective, especially in countries like Madagascar where documentation centers are insufficient, and the few present do not gather enough works.

IV. Emergence of New Values and Principles in Teaching and Research

The transition to a digital era has profoundly reshaped the paradigms of teaching and research, establishing new values and principles that redefine how we understand, communicate, and produce knowledge. Significant transformations in these areas in light of Digital Humanities are not uncommon, highlighting emerging values and principles underpinning this evolution.

Firstly, Digital Humanities have emphasized the intrinsic value of accessibility. Access to information, educational resources, and research results is now considered an ethical imperative. This has led to initiatives aimed at making teaching and research more open, inclusive, and accessible to a diverse audience. Additionally, traditional disciplinary boundaries are increasingly being questioned, fostering a culture of collaboration and interdisciplinarity (although, in African countries, as mentioned, international collaboration is not yet sufficiently prioritized in terms of joint projects). However, research projects integrate diverse skills, while teaching adopts cross-cutting approaches, allowing a more holistic understanding of contemporary issues.

The emergence of Digital Humanities has also breathed new life into digital creativity, encouraging the exploration of new forms of artistic expression, interactive storytelling, and visual engagement in teaching and research. Creativity becomes an essential driver of innovation and scientific communication. Not to forget its primary role in teaching and research, establishing a space where educators and researchers encourage the development of discernment skills in the face of information abundance while cultivating an analytical and reflective approach to source evaluation. But a crucial aspect is at the heart of the concerns of Digital Humanities, namely the protection of data, privacy, and digital equity, which adds value to its processes. Values of social responsibility and digital ethics now guide research and teaching practices to ensure ethical use of technologies.

From a research perspective, Digital Humanities facilitate a more collaborative and transdisciplinary approach. Researchers in Humanities and Social Sciences now have access to advanced data processing and analysis methodologies, opening new perspectives for understanding social and cultural phenomena. The use of digital corpora, visualization tools, and algorithms not only accelerates the research process but also explores questions that were previously out of reach. However, it is essential to acknowledge that this transition to Digital Humanities comes with challenges, especially in African countries, as highlighted throughout this article. The need to train researchers and teachers in digital skills, as well as ensuring equitable access to technologies, remains a major concern. Furthermore, the issue of data preservation and ethics in this digital context we have discussed emerges as a crucial issue that requires constant attention.

V. Human-Centered Approaches: Similarities between UX/UI and Digital Humanities

The intersection between UX/UI design and human-centered Digital Humanities reveals profound conceptual similarities. The primacy of the user, empathy, inclusion, and the pursuit of harmony between technology and the human experience are shared themes illustrating a common orientation towards understanding and improving the interaction between individuals and the digital realm. This convergence provides fruitful opportunities for creating more human-centric digital technologies, centered on the needs and aspirations of users.

Firstly, it is essential to underscore the UX/UI principle, rooted in the design of intuitive and aesthetic digital interfaces aimed at optimizing the user experience when interacting with digital products. On the other hand, human-centered Digital Humanities revolve around leveraging digital technologies to enhance the understanding of human phenomena. Despite these apparent differences, several conceptual similarities emerge.

First and foremost, the user is at the core of concerns in both domains. In UX/UI, emphasis is placed on understanding the needs, expectations, and behaviors of users while seeking to design interfaces that facilitate a seamless and rewarding experience. Similarly, human-centered Digital Humanities focus on the active participation of individuals in the creation, dissemination, and consumption of knowledge, utilizing technologies to make these processes more accessible and engaging.

Next, the importance given to empathy characterizes both domains. In UX/UI, the creation of a successful user experience relies on a profound understanding of users' perspectives and emotions. Similarly, Digital Humanities underscore the need for methodological empathy, where researchers recognize and understand the subjective realities of participants in their surveys and analyses.

Furthermore, the notion of accessibility and inclusion is a cross-cutting concern. In UX/UI, inclusive design aims to ensure that interfaces are accessible to everyone, regardless of physical or cognitive differences. In the context of Digital Humanities, the focus on inclusion is evident in the search for means to ensure that the benefits of digital technologies are extended to the entire society, thereby avoiding the creation of digital divides. Finally, the pursuit of harmony between technology and the human experience unifies the two domains. UX/UI seeks to create synergy between technological features and user preferences to evoke an immersive and enjoyable experience. Similarly, Digital Humanities strive to create digital environments where technology serves as a means to enrich human experiences rather than dominate them.

VI. Beyond Academic Boundaries: Interdisciplinarity in Digital Humanities

Digital Humanities (DH) in Africa embody an interdisciplinary approach that transcends the traditional boundaries of humanities and social sciences. This interdisciplinarity is evident through a harmonious convergence between technological advancements and classical methodologies of academic disciplines. The digitization of archives and historical documents, for instance, represents a fruitful collaboration between computer science and history, enabling access to cultural resources while preserving heritage. Similarly, online education and learning platforms merge the realms of pedagogy and technology to broaden access to higher education, challenging geographical constraints.

Collaborative mapping engages geographers, anthropologists, and computer scientists in documenting local knowledge, illustrating a synergy between diverse disciplines. Digital linguistic tools, such as Natural Language Processing (NLP) for African languages, merge linguistics and computer science to preserve linguistic diversity. Oral archiving and digital storytelling, integrating the skills of ethnographers and technology experts, dynamically preserve collective memory. Finally, virtual international collaboration strengthens ties between African and international researchers, fostering diverse perspectives.

Thus, the interdisciplinarity of DH in Africa creates a rich intellectual fabric, offering innovative opportunities for teaching and research while stimulating a profound and nuanced understanding of the cultural and social realities of the continent.

CONCLUSION

In conclusion, the evolution of Digital Humanities in the field of Humanities and Social Sciences, particularly within the context of African countries, signifies a significant transition towards an innovative approach to teaching and research. A current assessment reveals a slow but promising growth, where certain categories of actors in education and research are embracing the opportunities presented by digital tools. Survey methodologies, employed to comprehend specific needs and challenges, emphasize the importance of contextualizing solutions to ensure their relevance and effectiveness. However, it is crucial to consider the necessity of tailored training and awareness initiatives to encompass the entire system in the shift towards the digital era, without completely erasing traditional approaches.

The tangible impacts of Digital Humanities are evident, enhancing accessibility to resources, facilitating international collaboration, and providing new perspectives on interactive teaching. Initiatives such as archive digitization, online education platforms, and collaborative mapping hold transformative potential, making research more inclusive and education better suited to local needs. Additionally, emerging values in the fields of teaching and research integrate technology as a catalyst for innovation, fostering a more participatory, collaborative, and student-centered approach. Digital Humanities not only enrich the way knowledge is generated but also how it is shared, preserved, and valued. Finally, interdisciplinarity stands as a central pillar in this context. Digital Humanities provide a platform where disciplines organically converge, fostering fruitful dialogue among humanities researchers, computer scientists, linguists, and other stakeholders. This interdisciplinary collaboration, essential for addressing complex issues, reflects the inherent richness of Digital Humanities and encourages the breaking down of barriers among researchers and their research domains.

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