Data-driven Decolonization: Integrating Social Justice Principles in LIS for Knowledge Production and Processing in Africa

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Abstract

This essay conceptualizes the integration of data librarianship and decolonial approaches in Library and Information Science (LIS) education in Africa, addressing the challenges of algorithmic colonization in knowledge production and dissemination. Through analysis of current literature and theoretical perspectives, significant gaps in existing LIS curricula were identified, particularly in addressing data colonialism and indigenous knowledge systems. Drawing on critical pedagogy and decolonial theory, we propose the Algorithmic Decolonization of Curriculum Framework (ADeC Framework) as a comprehensive approach to transforming LIS education. The framework consists of four key components: Critical Data Literacy, Indigenous Knowledge Systems Integration, Ethical Algorithmic Practices, and Community-Centered Approaches. The ADeC Framework provides structured guidance for curriculum reform, faculty development, and community engagement, emphasizing the importance of balancing technical competencies with critical consciousness of colonial legacies in information systems. The essay outlines specific implementation strategies, including curriculum audit processes, faculty training programs, community partnership development, and monitoring mechanisms. It suggests that successful integration of data-driven decolonial approaches requires sustained institutional commitment, adequate resources, and meaningful collaboration with local communities. This essay contributes to ongoing discussions about decolonization in Africa, particularly, LIS education and offers practical solutions for promoting social justice through data practices in African contexts.

Keywords: data librarianship, decolonization, LIS education, algorithmic justice, indigenous knowledge systems—Africa, social justice

Introduction

The field of Library and Information Science (LIS) stands at a critical juncture as it

grapples with the challenges and opportunities presented by the data revolution. In Africa, where the impacts of colonialism continue to shape knowledge production and dissemination, the integration of data librarianship into LIS curricula offers a unique opportunity to advance social justice and decolonization efforts. Traditional Western-centric epistemologies have long dominated not only academic discourse but also data processing and algorithmic development (Birhane, 2020; Lambrechts, Sinha, & Mosoetsa, 2022; Milan & Treré, 2019). This "algorithmic colonization" perpetuates existing inequalities and biases in knowledge production and dissemination. Libraries, as trusted institutions providing unbiased information, are uniquely positioned to challenge these disparities. The concept of algorithmic colonization extends beyond mere bias in data systems. It encompasses the broader socio-technical structures that reinforce power imbalances and perpetuate the marginalization of non-Western knowledge systems (Couldry & Mejias, 2019). This form of colonization operates through the extraction, processing, and commercialization of data, often without regard for local contexts or indigenous knowledge frameworks (Thatcher, O'Sullivan, & Mahmoudi, 2016).

In the African context, the impacts of algorithmic colonization are particularly pronounced. Kwet (2019) argues that the digital ecosystem in Africa is largely controlled by Western tech giants, leading to a form of "digital colonialism" that undermines local innovation and data sovereignty. This dominance extends to academic databases, citation indices, and research evaluation metrics, which often undervalue or exclude African scholarship (Grant, 2020; Ngeh, 2021; Openjuru et al., 2015). Libraries and information centers in Africa face the dual challenge of navigating this digitally colonized landscape while also working to preserve and promote local knowledge systems. African libraries must balance the adoption of global digital technologies with the need to center African epistemologies and ways of knowing (Ndasauka, 2024; Moahi, 2012).

The decolonization movement in academia

The decolonization movement seeks to redress imbalances by questioning traditional Western-centric epistemologies (Au, 2023). This movement advocates for the inclusion of diverse perspectives and knowledge systems, particularly those that have been historically marginalized or excluded from academic discourse. Decolonization in academia goes beyond simply diversifying content or increasing representation. It involves a fundamental reimagining of knowledge production, validation, and dissemination processes (Bhambra, Gebrial, & Nişancıoğlu, 2020). In the context of LIS education, decolonization calls for a critical examination of cataloging systems, metadata standards, and information organization principles that have historically privileged Western knowledge structures (Dudley, 2017).

The movement also emphasizes the importance of "cognitive justice," a concept introduced by Visvanathan (2009) that argues for the recognition and equal treatment of diverse knowledge systems. This is particularly relevant in the African context, where indigenous knowledge systems have often been marginalized or appropriated by Western academic traditions (Mkhize & Ndimande-Hlongwa, 2014). In LIS education, the decolonization movement has sparked debates about the nature of information literacy and the role of libraries in perpetuating or challenging colonial legacies. Scholars like Crilly (2019) have called for a "critical library instruction" approach that encourages students to question the power structures embedded in information systems and practices. The intersection of decolonization and data science presents both challenges and opportunities. While big data and algorithmic systems have the potential to perpetuate colonial power structures, they also offer tools for countering these narratives. Scholars like Kukutai and Taylor (2016) have explored the concept of "indigenous data sovereignty," which asserts the right of indigenous peoples to control the collection, ownership, and application of data about their communities.

As LIS education evolves to incorporate data librarianship, it must do so with a decolonial lens. This means not only teaching technical skills but also fostering critical consciousness about the political and ethical implications of data practices. It requires a commitment to developing curricula that center African perspectives, promotes local innovation, and equip students to challenge the digital and algorithmic manifestations of colonial power.

Research problem and aim

Despite the potential of data librarianship to promote social justice and improve scholarly communication in Africa, there remains a significant gap in the integration of these competencies within LIS education. Many LIS curricula lack a comprehensive focus on data management and algorithmic decolonization, perpetuating existing disparities and limiting the capacity of LIS professionals to engage in transformative practices.

The gap in data librarianship education in Africa stems from several interconnected issues. One key factor is the curriculum lag, where LIS programs struggle to keep up with evolving technological advancements and the changing nature of information work. Many programs remain focused on traditional librarianship skills, with limited attention to emerging areas like data management and digital curation, crucial for the Fourth Industrial Revolution (Livi & Salubi, 2024; Ocholla & Ocholla, 2020; Okeji & Mayowa-Adebara, 2020). Resource constraints further exacerbate this, as many African institutions lack the necessary ICT infrastructure, access to current literature, and qualified faculty with expertise in data science and management, limiting students' exposure to practical data tools (Abdelfattah et al., 2023; Majanja, 2020). Additionally, Western epistemologies dominate LIS curricula, often sidelining African knowledge systems, which restricts students from

navigating local contexts and addressing data colonialism (Carroll et al., 2013; Lor, 2015).

Moreover, LIS programs in Africa often lack sufficient focus on critical data literacy and the ethical dimensions of data practices. While some programs incorporate data management, many still emphasize technical skills over understanding the social and political implications of data structures (Crawford & Paglen, 2021; Engelmann & Papakyriakopoulos, 2023). This gap extends to data ethics and governance, where issues such as data sovereignty and algorithmic bias, crucial in the African context, receive insufficient coverage (Zimmer, 2018). Additionally, the growing demand for research data management, driven by open science and data-intensive research, highlights the need for better preparation in this area. Chiware and Mathe (2015) found that LIS curricula often fail to equip students with the necessary skills to support researchers in managing, sharing, and preserving research data. This gap limits the ability of African scholarship to increase its visibility and impact on the global stage.

This multifaceted problem not only affects the quality of LIS education but also has broader implications for knowledge production and dissemination in Africa. By failing to equip LIS professionals with critical data skills and decolonial perspectives, we risk perpetuating systems of knowledge inequality and limiting Africa's participation in the global data economy. Addressing these gaps requires a comprehensive reimagining of LIS education in Africa, one that places data librarianship and critical data studies at the center of the curriculum while also prioritizing local knowledge systems and community needs. This essay aims to contribute to this reimagining by proposing a framework for integrating data-driven approaches and decolonial perspectives into LIS education.

Literature review and theoretical framework

The intersection of data librarianship, decolonization, and LIS education in Africa is rather complex. Recent scholarship has highlighted the ways in which data practices and algorithmic systems perpetuate colonial power structures. Birhane (2020) argues that algorithmic systems often embed and reproduce Western epistemologies, while Milan and Treré (2019) discuss the concept of "data colonialism" as a framework for understanding how data extraction and processing practices impact Global South communities.

Increasingly, scholarly discourse has focused on the intersection of data librarianship, social justice, and decolonization. Heeks and Renken (2018) highlight the potential of data librarianship to address social inequalities, emphasizing its role in informing inclusive policies and practices. They argue that by equipping LIS professionals with data management and analysis skills, it is possible to develop systems that reflect diverse perspectives and needs. This perspective is particularly relevant in Africa, where the legacy of colonialism continues to shape how information is controlled and

disseminated. Similarly, Czerniewicz (2018) advocates for decolonizing educational practices by integrating indigenous and diverse epistemologies into curricula. This call for decolonization extends to LIS education, where there is growing recognition of the need to challenge dominant paradigms that prioritize Western knowledge systems and marginalize others. In the context of data librarianship, this includes not only teaching technical skills but also fostering a critical awareness of power dynamics in data systems and exploring ways to reconfigure these systems to promote social justice.

The concept of "data colonialism" has emerged as a critical framework for understanding the power dynamics inherent in contemporary data practices. Couldry and Mejias (2019) argue that data colonialism represents a new stage of capitalist development, characterized by the appropriation of human life through data extraction. This process mirrors historical colonialism through its extractive logic and its reshaping of social relations in the interests of capital. In Africa, data colonialism has particularly significant implications. Kwet (2019) introduces the concept of "digital colonialism" to describe the dominance of Western tech companies in Africa's digital ecosystem, which perpetuates economic domination and cultural imperialism. Data colonialism takes on several distinct forms, each of which has significant implications for the region's digital landscape and its relationship with the global data economy. One key manifestation is through data extraction. As Arora (2019) highlights, large-scale data collection efforts across the continent often benefit foreign companies and researchers more than the local communities that provide the data. This process, which Arora terms "data extractivism," raises critical questions about data ownership and privacy, particularly in contexts where data protection laws are weak or non-existent. The imbalance in the benefits derived from such data collection highlights the exploitative nature of these practices, reflecting broader patterns of historical resource extraction in colonial contexts.

Another pressing issue in the African context is algorithmic bias. The datasets used to train algorithms in Africa often fail to adequately represent the continent's diverse populations. Buolamwini and Gebru (2018) provide compelling evidence of significant disparities in the accuracy of facial recognition systems across different demographic groups, with darker-skinned women being the most misclassified group. These biases can have serious implications when such systems are deployed in critical areas like law enforcement, healthcare, and finance, where inaccurate results can lead to harmful outcomes. The underrepresentation of African populations in these datasets perpetuates a cycle of marginalization and exclusion in digital spaces.

Theoretical framework

The theoretical underpinnings of this research are grounded in two complementary approaches: critical pedagogy and decolonial theory. These frameworks provide a robust

foundation for examining the role of data librarianship in advancing social justice and decolonization within LIS education in Africa.

Critical pedagogy

Critical pedagogy, as articulated by Paulo Freire (1970) in his seminal work "Pedagogy of the Oppressed," provides a framework for understanding education as a tool for empowerment and social change. In the context of LIS education, critical pedagogy offers valuable insights into how data librarianship can challenge existing power structures and promote social justice. Key principles of critical pedagogy, as articulated by Freire (1970), are highly relevant to this study. Conscientization, the process of developing critical consciousness, emphasizes understanding the social, political, and economic contradictions within society. In the context of data librarianship, this principle translates into fostering an awareness of the power dynamics embedded in data structures and algorithmic systems, highlighting the need to critically assess these frameworks (Gorham, 2020). Praxis, another core tenet of Freire's philosophy, involves the integration of reflection and action. This principle suggests that LIS education should not only focus on technical skills but also encourage students to critically reflect on and actively challenge oppressive data practices (Tewell, 2015).

Freire also advocates for dialogue as an essential educational practice, where knowledge is co-created through interaction between teachers and students. This concept aligns with the need for LIS education to engage with local communities and incorporate diverse knowledge systems in data practices (Lor & Britz, 2010). Additionally, Freire's problem-posing education contrasts with the traditional "banking" model of education, where students passively receive knowledge. Instead, the problem-posing approach encourages critical thinking, which is particularly important in data librarianship. It enables students to navigate complex ethical and social issues related to data management and use (Higgins & Gregory, 2013; Tewell, 2020). The application of critical pedagogy to LIS education has been explored by scholars such as Elmborg (2006) and Cooke (2017), who argue for a critical information literacy that goes beyond teaching skills to address the social and political dimensions of information. In the context of data librarianship, critical pedagogy can inform approaches that challenge the neutrality of data and encourage students to question who benefits from current data practices (Agosto, 2018).

Decolonial theory

Decolonial theory provides a framework for understanding and challenging the ongoing impacts of colonialism on knowledge production and dissemination. This theoretical approach is particularly relevant in the African context, where colonial legacies continue to shape academic practices and information systems. Fundamental concepts from decolonial theory provide a crucial framework for this research. One of these is the "coloniality of

knowledge," introduced by Quijano (2007) and extended by Mignolo (2011), which refers to how Western epistemologies have been universalized and positioned as superior to other knowledge systems. In the context of LIS education, this concept highlights the need to move away from Western-centric approaches to data management and to recognize and integrate African knowledge systems (Oliphant, 2015). Another relevant idea is "epistemic delinking," advocated by Mignolo (2011) as a means of breaking free from colonial modes of thinking. In data librarianship, this could involve developing classification systems and metadata standards that reflect African worldviews and linguistic diversity (Keet & Khumalo, 2017).

The principle of pluriversality, proposed by Grosfoguel (2017), emphasizes the coexistence of multiple ways of knowing, rejecting the notion of a single universal epistemology. This concept can guide the development of data practices that incorporate and respect diverse epistemologies (Arthur et al., 2023). Lastly, Mignolo and Vazquez's (2013) concept of "decolonial aesthesis" challenges the dominance of Western-centric aesthetics and promotes reclaiming marginalized forms of sensing and perceiving. In the realm of data visualization and representation, this approach encourages alternative ways of presenting information that move beyond Western visual norms (D'Ignazio & Klein, 2020). The application of decolonial theory to LIS has been explored by scholars who examine how decolonial approaches can inform critical cataloging practices (Anderson, Boss, & Bucy, 2023; Snow & Dunbar, 2022). In the context of data librarianship, decolonial theory can provide a framework for developing data management practices that challenge digital colonialism and promote data sovereignty for African communities (Pollock, 2019).

By integrating critical pedagogy and decolonial theory, this research aims to develop a nuanced understanding of how data librarianship education in Africa can be transformed to promote social justice and challenge colonial legacies in knowledge production and dissemination. This theoretical framework provides a foundation for reimagining LIS curricula in ways that center African perspectives, promote critical engagement with data practices, and equip future professionals to navigate the complex ethical landscape of the data-driven world.

The Algorithmic Decolonization of Curriculum Framework (ADeC Framework)

The development and implementation of the Algorithmic Decolonization of Curriculum Framework (ADeC Framework) is a pivotal proposal of this essay, aimed at guiding the realignment of LIS curricula to include data-driven approaches that support equitable knowledge production, processing, and dissemination.

Framework overview

The ADeC Framework is a comprehensive approach to integrating data librarianship into LIS curricula while prioritizing decolonization and social justice. The framework consists of four key components: Critical Data Literacy; Indigenous Knowledge Systems Integration; Ethical Algorithmic Practices; and Community-Centered Approaches. This framework is comprehensive in scope, addressing the integration of data librarianship into LIS curricula while simultaneously centering decolonization and social justice principles. Drawing inspiration from existing models such as Indigenous Data Sovereignty frameworks (Kukutai & Taylor, 2016) and Critical Data Studies (Iliadis & Russo, 2016), the ADeC Framework seeks to redefine the pedagogical approaches in LIS education in Africa to ensure inclusivity, representation, and ethical practices.

Critical data literacy

Critical data literacy is a foundational element of the Algorithmic Decolonization of Curriculum Framework (ADeC Framework), aiming to bridge technical skills with a deeper understanding of the ethical and societal implications of data use. Technical expertise alone is insufficient without a critical consciousness of how data practices are embedded in broader social, political, and cultural contexts. Thus, the ADeC Framework prioritizes an integrated approach that fosters not only the ability to work with data but also the capacity to analyze and question the inherent biases, power structures, and historical legacies that shape data systems. At the core of critical data literacy is the cultivation of technical competencies. These include essential skills such as data management, curation, and statistical literacy. In addition to these technical skills, the ADeC Framework emphasizes the development of critical analysis skills that allow students to engage with the ethical dimensions of data.

One of the key aspects of critical data literacy is the ability to recognize and interrogate data bias and power structures. Data is not neutral; it is often shaped by the agendas, perspectives, and interests of those who create, collect, and analyze it (D'Ignazio & Klein, 2020). This awareness extends to an understanding of algorithmic discrimination, where biases embedded in data can lead to biased outcomes in machine learning and algorithmic decision-making (Noble, 2018). Another component of critical data literacy is the recognition of data colonialism: the ways in which data extraction and usage mirror historical patterns of colonial domination and exploitation (Couldry & Mejias, 2019). By framing data practices within the broader context of global inequalities, students learn to identify ways in which data can be used to marginalize and exploit communities, particularly in the Global South. This component of the ADeC Framework argues for the questioning of underlying assumptions of data practices that may appear neutral but are often embedded in neo-colonial power structures. Understanding these dynamics is key to fostering an ethical approach to data use that prioritizes the rights, autonomy, and dignity of marginalized populations.

Indigenous knowledge systems integration

This component of the ADeC Framework aims at addressing the historical marginalization of African epistemologies and knowledge systems specifically in data management and more broadly, within Library and Information Science (LIS). Traditional Western approaches to data practices and knowledge organization often exclude or inadequately represent indigenous perspectives, resulting in the continued erasure of cultural knowledge and practices. By integrating African knowledge systems into data practices, the ADeC Framework seeks to redress this imbalance, ensuring that indigenous ways of knowing and organizing information are preserved, respected, and actively incorporated into modern data infrastructures.

A key focus of this component is on knowledge organization, which emphasizes the inclusion of indigenous classification systems in data practices. Traditional methods of organizing knowledge in African societies are often based on relational, community-based, and context-sensitive frameworks that differ significantly from Western systems (Agyemang, Ngulube & Dube, 2019). These indigenous methods are deeply tied to local cultural values, oral traditions, and spiritual practices. The ADeC Framework advocates for the integration of these indigenous classification systems into modern data infrastructures to ensure that they reflect the knowledge hierarchies and relationships that are meaningful within the communities that produce them. Additionally, the framework promotes the development of local language metadata frameworks, allowing data to be categorized and accessed using the languages and terms that are relevant to indigenous communities. This ensures not only the preservation of linguistic diversity but also the accessibility of data to local populations.

Another critical aspect of knowledge organization is the importance of cultural heritage preservation protocols. African societies possess vast repositories of cultural heritage, including oral histories, traditional arts, agricultural knowledge, and medicinal practices. The ADeC Framework argues for the establishment of protocols that prioritize the ethical documentation, preservation, and sharing of this knowledge in ways that align with the values and consent of the communities involved. This includes respecting cultural sensitivities around the use and dissemination of certain forms of knowledge, ensuring that indigenous communities have a voice over how their knowledge is used and shared.

Ethical algorithmic practices

Ethical algorithmic practice is the third construct of the ADeC Framework, underscoring the necessity of embedding ethical considerations into the design, implementation, and evaluation of algorithms in Library and Information Science (LIS). One of the foremost aspects of ethical algorithmic practices is the concept of algorithmic justice. This principle emphasizes the importance of ensuring fair representation in the datasets

used to train algorithms (Buolamwini & Gebru, 2018). The ADeC Framework advocates for rigorous bias detection and mitigation strategies, encouraging LIS professionals to critically assess the data they use and the algorithms they deploy. This includes actively seeking diverse and representative datasets that reflect the communities served, as well as employing techniques that identify and reduce bias in algorithmic outputs. By prioritizing algorithmic justice, the framework aims to ensure that all individuals, regardless of their background, are treated equitably in data-driven systems.

In addition to fair representation, ethical algorithmic practices must include transparency and accountability measures. The ADeC Framework emphasizes the need for clear documentation of algorithms, including the methodologies used in their development, the sources of training data, and the criteria for decision-making processes. The sub-component of the framework also highlights the significance of contextual implementation in ethical algorithmic practices. Algorithms do not operate in a vacuum; they are situated within specific cultural, social, and political contexts that can significantly impact their effectiveness and fairness (Shankar et al., 2017).

Community-centered approaches

At the heart of community-centered approaches is the concept of participatory design. This involves collaborating with community members in the creation of data projects, allowing them to play an active role in shaping the tools, methodologies, and outcomes that directly affect their lives (Smith, 2021). Participatory design emphasizes the importance of local knowledge and expertise, recognizing that community members possess valuable insights into their own needs and challenges. This collaborative approach fosters a sense of ownership among community members, leading to greater investment in the success and sustainability of data initiatives.

Integrating local knowledge into data practices is another crucial aspect of this component. Local knowledge encompasses the lived experiences, cultural traditions, and historical contexts of community members, providing essential insights that can inform data initiatives. By recognizing and valuing this knowledge, data systems are created that are not only technically sound but also culturally sensitive and contextually relevant. This involves training information professionals to appreciate and incorporate local knowledge in their work, ensuring that data practices are informed by a deep understanding of the communities they aim to serve.

ADeC Framework implementation strategies

The successful implementation of the Algorithmic Decolonization of Curriculum Framework (ADeC Framework) requires a multi-faceted approach that involves a

comprehensive strategy. This strategy encompasses various elements, including curriculum audit and revision, faculty development, community partnerships, and continuous monitoring and evaluation. Each of these components plays a critical role in ensuring that the principles of the ADeC Framework are effectively integrated into Library and Information Science (LIS) education and practice on the basis of local needs.

Curriculum audit and revision

The first step in implementing the ADeC Framework is conducting a curriculum audit and revision. This process is essential for identifying and addressing any Western-centric biases present in existing LIS curricula. A thorough curriculum audit involves a systematic review of course materials, instructional methods, and learning outcomes to evaluate their alignment with the principles of decolonization and social justice. Content analysis is a crucial component of the audit process. It entails the systematic review of course materials to uncover any epistemological assumptions that prioritize Western knowledge systems over indigenous and local knowledge systems. This analysis enables educators to identify gaps in representation and inclusion, ensuring that diverse perspectives are integrated into the curriculum.

Once the audit is complete, it is important to identify integration opportunities. This involves mapping critical data literacy components within the existing curriculum and identifying cross-cutting themes that can enhance the learning experience. Educators can develop new course modules that focus on indigenous knowledge systems, ethical algorithmic practices, and community-centered approaches, enriching the overall educational framework and promoting inclusivity. The implementation of the curriculum audit and revision should also involve the establishment of assessment methods that reflect the values of decolonization. This may include developing decolonial evaluation criteria that assess student performance through a lens of social justice and inclusivity. Feedback mechanisms should be established to continuously gather insights from the community, students and faculty, enabling ongoing curriculum refinement.

Faculty development

Building faculty capacity is another critical aspect of implementing the ADeC Framework. Faculty development initiatives aim to equip educators with the knowledge, skills, and pedagogical strategies necessary to effectively teach and promote the principles outlined in the framework. Training Programs are essential for providing faculty members with a deeper understanding of decolonial pedagogies and their application in LIS education. Workshops focused on decolonial pedagogies can help educators explore alternative teaching methods that center indigenous knowledge and community engagement. Additionally, faculty members should have opportunities to pursue data management certification and training in indigenous knowledge systems, enhancing their technical competencies and cultural awareness.

The establishment of collaborative networks can further strengthen faculty development efforts. By fostering partnerships with knowledge keepers, community experts, and other educational institutions, faculty members can share resources, insights, and best practices. These collaborative networks can also facilitate inter-institutional collaboration, enabling faculty to engage in joint research projects and community outreach initiatives. Providing research support is equally important in empowering faculty to engage with the principles of the ADeC Framework. This includes offering resources on decolonial research methodologies, funding opportunities for community-centered research, and support for publication in relevant academic journals. Encouraging faculty participation in conferences focused on decolonization and social justice in LIS can further enhance their professional development.

Community partnerships

Partnership development begins with stakeholder identification, where LIS educators and professionals work to identify key community members, organizations, and leaders who can contribute to the development and implementation of data initiatives. Building strong relationships with these stakeholders is crucial for fostering trust and mutual understanding. Establishing formal agreements, such as memoranda of understanding, can further solidify these partnerships and outline the roles and responsibilities of each party involved. Also, creating learning opportunities through community-based projects is an effective way to engage students and faculty with local communities. These projects can take various forms, including field experiences that allow students to apply their skills in real-world settings, and internship programs that place students in community organizations. These experiential learning opportunities not only enhance student learning but also strengthen the connections between LIS programs and local communities.

Facilitating resource sharing is another important aspect of community partnerships. This involves establishing knowledge exchange programs that promote collaboration and learning between LIS educators and community members. Additionally, providing technical infrastructure support, such as access to data management tools and software, can enhance the capacity of community organizations to engage in data initiatives. Capacity building initiatives, aimed at empowering community members with data literacy skills, are also crucial for ensuring that partnerships are sustainable.

Monitoring and evaluation

Regular assessment and evaluation are vital for ensuring the effectiveness of the ADeC Framework and its implementation within LIS education and practice. A robust monitoring and evaluation strategy allows educators and stakeholders to assess progress, identify challenges, and make informed decisions for continuous

improvement. Establishing performance metrics is the first step in developing an effective monitoring and evaluation framework. Metrics should include student learning outcomes, community impact indicators, and measures of program effectiveness. These metrics provide a quantifiable basis for assessing the success of curriculum changes, faculty development efforts, and community partnerships. Implementing feedback mechanisms is also crucial for gathering insights from various stakeholders. Conducting stakeholder surveys, community consultations, and student assessments allows for the collection of qualitative and quantitative data that informs decision-making processes. This feedback can reveal areas for improvement and highlight successful practices that can be replicated. To foster a culture of continuous improvement, the ADeC Framework argues for the establishment of regular review cycles. These cycles should involve ongoing reflection and adaptation of strategies based on the results of monitoring and evaluation activities. This iterative process allows educators and community partners to remain responsive to the evolving needs of the communities they serve.

Conclusion and recommendations

This essay has demonstrated that the integration of data librarianship with decolonial approaches in Library and Information Science (LIS) education represents a critical opportunity to address historical inequities in knowledge production and dissemination in Africa. The proposed Algorithmic Decolonization of Curriculum Framework (ADeC Framework) offers a structured approach to transforming LIS education by combining technical data competencies with a critical consciousness of colonial legacies in information systems. The persistent influence of Western epistemologies in data practices and algorithmic systems continues to marginalize African knowledge systems and perpetuate digital colonialism. The ADeC Framework, through its four key components—Critical Data Literacy, Indigenous Knowledge Systems Integration, Ethical Algorithmic Practices, and Community-Centered Approaches—provides a comprehensive foundation for addressing these challenges. The framework's emphasis on participatory design and local knowledge integration ensures that data practices remain relevant and responsive to community needs while challenging colonial power structures in knowledge production.

Several recommendations are proposed for LIS educators, institutions, professionals, and policymakers. For educators and institutions, curriculum reform is essential, requiring audits to address Western-centric biases and the integration of indigenous knowledge systems into core coursework. Practical training modules in data management should incorporate decolonial perspectives, and assessment methods should reflect community impact. Faculty development should include regular training in decolonial pedagogies, mentorship programs for early-career educators, and support for research initiatives that advance decolonial practices. International collaborations with institutions

that share similar goals should also be fostered. In professional practice, community engagement is critical, with a focus on establishing partnerships with local communities, developing collaborative data projects, and supporting indigenous data sovereignty. For policymakers, developing a regulatory framework that protects indigenous knowledge in digital environments is vital. This includes guidelines for ethical data use, frameworks for community consultation, and policies that promote African data sovereignty. Resource allocation must increase funding for decolonial initiatives, support infrastructure development, and invest in research and community-based data projects.

The transformation of LIS education through data-driven decolonization represents a crucial step toward more equitable knowledge production and dissemination in Africa. By implementing these recommendations, LIS educators and professionals can contribute to dismantling colonial structures in information services and knowledge systems while promoting social justice and community empowerment. The success of these efforts will require sustained commitment, adequate resources, and meaningful collaboration between institutions, communities, and stakeholders at all levels.

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