

# Experiences of students with disabilities toward digital library resources: A case study of selected public universities in Kenya

Technology and Disability  
2026, Vol. 0(0) 1–10  
© The Author(s) 2026  
Article reuse guidelines:  
[sagepub.com/journals-permissions](https://sagepub.com/journals-permissions)  
DOI: [10.1177/10554181261427317](https://doi.org/10.1177/10554181261427317)  
[journals.sagepub.com/home/tad](https://journals.sagepub.com/home/tad)  
Mary Ann Liebert  
A Part of Sage

Stephen Maina<sup>1</sup> , Proscovia Svärd<sup>2</sup>, and Naomi Mwai<sup>3</sup>

## Abstract

**Background:** The rapid expansion of digital technologies has reshaped higher education, with digital libraries significantly increasing access to scholarly resources. Despite these advances, students with disabilities (SWDs) continue to face barriers that restrict effective participation in digital library environments across many universities.

**Purpose:** This study examined the experiences of SWDs in accessing and using digital library resources in six Kenyan public universities, with particular focus on institutional infrastructure, policy frameworks, and staff engagement.

**Research Design:** A qualitative descriptive and exploratory research design was adopted to gain in-depth understanding of accessibility conditions and user experiences in digital library contexts.

**Study Sample:** The study involved 54 SWDs, including 33 visually impaired and 21 hearing impaired students, alongside library staff and disability coordinators from six public universities in Kenya.

**Data Collection and/or Analysis:** Data were collected through semi-structured interviews, document review, and field observations. Thematic analysis was conducted using NVivo 14 to identify recurring patterns and key factors influencing digital inclusion.

**Results:** Findings showed significant differences in accessibility and usability across institutions. Universities with integrated assistive technologies, trained and supportive staff, and structured support programs promoted autonomy and active engagement among SWDs. In contrast, outdated technologies, inaccessible platforms, and weak policy implementation limited participation. Barriers were technological, environmental, institutional, and individual, while facilitators included proactive staff support, peer networks, orientation programs, and basic adaptive tools.

**Conclusions:** Sustainable digital inclusion requires coordinated institutional action combining assistive technologies, universal design principles, continuous staff training, and strong governance frameworks. Enforceable accessibility policies, inclusive platform design, and national standardization frameworks are recommended to improve equitable access to digital library resources for SWDs in Kenyan public universities.

## Keywords

digital library resources, students with disabilities, digital accessibility, inclusive education, university libraries, Kenya

Received: 15 July 2025; revised: 3 November 2025; accepted: 6 February 2026

## Introduction

The rapid evolution of digital technologies has reshaped higher education, redefining how information is accessed, shared, and utilized. Digital libraries have emerged as critical components of academic ecosystems, offering vast collections of electronic resources that transcend physical and temporal barriers to learning.<sup>1</sup> For many students, these platforms have enhanced flexibility, interactivity, and independent learning. However, for students with disabilities (SWDs), the transformative promise of digital libraries often remains unrealized. Accessibility challenges, limited institutional support, and

inadequate digital infrastructures continue to impede their full participation in the digital learning environment.<sup>2–4</sup>

<sup>1</sup>Department of University Library, Kirinyaga University, Kerugoya, Kenya

<sup>2</sup>Department of History, Sorbonne University Abu Dhabi, Abu Dhabi, UAE

<sup>3</sup>Department of Information Science, Language and Communication Studies (DISLCS), Technical University of Kenya, Nairobi, Kenya

### Corresponding author:

Stephen Maina, Department of University Library, Kirinyaga University, Kerugoya, P.O Box 143-10300, Kenya.

Email: [stevemainar@gmail.com](mailto:stevemainar@gmail.com)

Globally, inclusive education has been recognized as a key pillar of equitable learning, grounded in frameworks such as the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) and the Sustainable Development Goals (SDG 4), which call for accessible, inclusive, and quality education for all.<sup>5</sup> Despite these commitments, disparities persist in how institutions operationalize digital inclusion. Research across various contexts indicates that accessibility barriers in digital library systems often stem from poor design, lack of compatibility with assistive technologies, and insufficient awareness among library staff regarding accessibility standards.<sup>2,3,6,7</sup> These limitations restrict SWDs' ability to engage with digital academic content on an equal footing with their peers.

In the African context, particularly within sub-Saharan Africa, universities face persistent constraints in funding, digital infrastructure, and policy implementation.<sup>8,9</sup> While significant strides have been made toward integrating information and communication technologies (ICTs) into education, accessibility considerations for students with disabilities often remain peripheral. Many institutions lack comprehensive accessibility policies or adequate training for library staff to support inclusive service delivery.<sup>2,3</sup> Consequently, SWDs frequently encounter difficulties in navigating online catalogues, using electronic databases, or accessing alternative content formats that meet their individual learning needs.<sup>10,11</sup>

In Kenya, public universities have invested heavily in digital library resources as part of national strategies to enhance learning, research, and innovation. Policies such as the Persons with Disabilities Act, the National ICT Policy, and the Commission for University Education (CUE) Standards and Guidelines which underscore the government's commitment to inclusive access to information.<sup>2,3</sup> Nevertheless, evidence from institutional reports and prior studies suggests a persistent gap between policy intent and actual practice in digital accessibility for SWDs.<sup>12,13</sup> Many university libraries still struggle with inaccessible platforms, limited assistive technologies, and minimal user-centered design, which marginalize students with visual, hearing, and mobility impairments.<sup>6</sup>

This study builds on these concerns by exploring the lived experiences of SWDs in navigating digital library resources within selected Kenyan public universities. Understanding these experiences provides critical insight into how institutional practices, technological infrastructures, and staff engagement influence digital inclusion. By documenting the barriers and enablers encountered by SWDs, the study aims to generate empirical evidence that can inform policy reforms and practical interventions to make digital library environments more accessible, equitable, and empowering for all learners.

### *Statement of the problem*

Digital library resources have become essential tools in advancing teaching, learning, and research in higher

education. They provide students with flexible, timely, and diversified access to scholarly content, thereby promoting academic equity and innovation. For SWDs, digital libraries hold the promise of mitigating traditional barriers to information access by integrating assistive technologies and accessible design features. However, this promise remains largely unrealized in many public universities in Kenya. Despite substantial investments in digital infrastructure and a supportive policy environment advocating for inclusivity, such as the Persons with Disabilities Act, the National ICT Policy and the Commission for University Education (CUE) Standards and Guidelines, many SWDs continue to face exclusion from full participation in digital learning spaces.<sup>2,3</sup>

Existing evidence points to persistent barriers that impede SWDs' ability to access and utilize digital library resources effectively. These include the limited availability and functionality of assistive technologies, inaccessible digital content formats, poor integration of accessibility features, and inadequate staff training on inclusive digital service delivery. Furthermore, institutional policies on digital accessibility are often fragmented or poorly implemented, leaving SWDs dependent on ad hoc personal assistance rather than systemic institutional support. Such conditions result in unequal access to digital academic content, limiting SWDs' academic engagement, autonomy, and sense of belonging within the university learning environment.

The gap between policy intentions and actual practice in digital inclusion underscores a broader systemic problem: universities may be technologically advancing without proportionately addressing the diverse needs of all learners. The limited empirical research documenting SWDs' lived experiences with digital library resources in the Kenyan public university context exacerbates this gap. Consequently, little is known about how institutional practices, technological infrastructure, and human support interact to either facilitate or hinder digital accessibility for SWDs.

Therefore, this study seeks to examine the experiences of students with disabilities in using digital library resources in selected Kenyan public universities. By exploring their perceptions, challenges, and coping strategies, the study aims to generate evidence-based insights that can inform policy, practice, and the design of more inclusive digital library systems capable of advancing equitable access for all learners.

### *Research objectives*

1. To examine the nature of digital accessibility of library resources as perceived by SWDs in selected Kenyan public universities.
2. To explore the role of library staff engagement and support in shaping SWDs' experiences with digital library resources.

3. To assess the influence of institutional infrastructure and policies on SWDs' access to and utilization of digital library resources.
4. To identify the specific barriers and facilitators encountered by SWDs when interacting with digital library resources.

### Research questions

1. What are the perceptions and experiences of SWDs regarding the digital accessibility of library resources in selected Kenyan public universities?
2. How does the engagement and support from library staff influence SWDs' experiences with digital library resources?
3. To what extent do institutional infrastructure and policies affect SWDs' access to and utilization of digital library resources?
4. What are the barriers and facilitators that SWDs encounter when using digital library resources in these universities?

### Significance of the study

This study is significant in deepening the understanding of digital inclusion for SWDs in Kenyan public universities. By examining their lived experiences with digital library resources, the research sheds light on the accessibility challenges, adaptive strategies, and institutional responses that shape their learning outcomes. The findings amplify the voices of SWDs, offering evidence that can guide the development of more inclusive and user-centered digital library services that enhance autonomy, participation, and academic achievement.

For university administrators, library management, and policymakers, the study provides practical insights into existing gaps in digital accessibility, staff preparedness, and policy enforcement. These insights can inform strategic planning, targeted resource allocation, and the formulation of inclusive institutional policies aligned with national frameworks such as the Persons with Disabilities Act and the National ICT Policy. The evidence generated can also support advocacy and accountability efforts aimed at strengthening inclusive digital education across higher learning institutions.

For library and information science professionals and future researchers, the study highlights the evolving competencies required to support digital accessibility, including proficiency in assistive technologies, universal design, and empathetic user engagement. Furthermore, it establishes a foundation for comparative and longitudinal studies on digital inclusion, fostering continued research on equitable access to information and learning resources within developing contexts.

### Literature review

The increasing digitization of higher education has transformed academic libraries into indispensable hubs of knowledge and research. Digital platforms now offer students remote access to vast collections of learning materials, promoting flexibility and continuous learning.<sup>1</sup> However, for SWDs, these opportunities are often mediated by the accessibility, design, and usability of such platforms. Existing literature reveals that SWDs' experiences with digital library resources vary widely depending on institutional readiness, staff support, and technological infrastructure.

Kulekpo<sup>14</sup> observed at the University of Education, Winneba (Ghana), that while SWDs accessed some digital library resources, their utilization was limited due to low awareness of assistive technologies and inadequate user guidance. Similarly, Arora,<sup>15</sup> studying Panjab University (India), reported that many SWDs were unaware of existing digital resources, primarily due to minimal awareness campaigns and insufficient faculty and peer support. These findings emphasize that access alone does not guarantee inclusion, awareness, usability, and the user's sense of empowerment are equally crucial. In Kenya, Luvale<sup>16</sup> confirmed that SWDs' experiences remain inconsistent, as most universities lack integrated assistive technologies and structured digital literacy programs. Collectively, these studies indicate that SWDs' perceptions of digital accessibility depend not only on the presence of resources but also on how well these resources accommodate diverse needs through inclusive design and awareness-building.

The engagement and support of library staff play a pivotal role in shaping how SWDs interact with digital library environments. Singh,<sup>17</sup> in a study conducted at the University of KwaZulu-Natal (South Africa), found that staff unfamiliarity with disability-related technologies and communication methods adversely affected SWDs' ability to access digital resources. The research revealed that institutions with well-trained, empathetic library personnel reported higher satisfaction levels and stronger feelings of belonging among SWDs. Similarly, Scoulas,<sup>18</sup> studying the University of Illinois, Chicago, during the COVID-19 pandemic, found that SWDs who engaged with proactive online librarian support, through chat services, virtual consultations, and instructional guides, expressed greater confidence and inclusion in their digital learning experiences.

In the Middle Eastern context, Hamad<sup>19</sup> found that the absence of trained accessibility staff at the University of Jordan limited the effectiveness of digital services. The study recommended continuous capacity-building programs and the creation of dedicated accessibility units within libraries. Collectively, these findings underscore that staff engagement, defined by awareness, empathy, and technical proficiency, directly influences whether SWDs perceive digital library systems as enabling or excluding.

Institutional infrastructure and policy frameworks determine the extent to which digital inclusion is realized in universities. According to Luvalé,<sup>16</sup> many Kenyan public universities still lack comprehensive digital accessibility policies or the infrastructure required to support SWDs. Although national frameworks such as Kenya's Persons with Disabilities Act (2003) and the Commission for University Education (CUE) Standards and Guidelines<sup>20</sup> emphasize inclusive education, actual implementation remains inconsistent across institutions.

Similarly, Dithale and Johnson<sup>8</sup> and Hamad<sup>19</sup> found that universities often have strong policy rhetoric but weak enforcement mechanisms, resulting in uneven accessibility standards. Mosha<sup>21</sup> extended this discussion by noting that even when advanced technologies such as AI-driven chatbots and assistive software exist, poor integration into library systems often limits their effectiveness. These studies affirm that institutional commitment, through infrastructural investment, clear accessibility standards, and regular evaluation, is vital in ensuring equitable digital access for SWDs. Without this foundation, policies risk remaining aspirational rather than transformative.

Across contexts, SWDs encounter recurring barriers that hinder effective utilization of digital library resources. Key among these are inaccessible web interfaces, incompatible file formats, poor internet connectivity, and limited availability of assistive technologies.<sup>6,14,16</sup> Human barriers, such as low awareness, untrained staff, and institutional ableism, further compound these challenges.<sup>19</sup> In many African universities, infrastructural deficits such as unreliable electricity and outdated software systems also constrain digital accessibility.<sup>9</sup>

Conversely, several facilitators have been identified. Scoulas<sup>18</sup> and Mosha<sup>21</sup> noted that proactive librarian engagement, awareness campaigns, AI-enabled chat support, and accessible content formats (such as e-books with text-to-speech functionality) significantly enhance inclusion. Additionally, participatory approaches, where SWDs are consulted in system design and policy formulation, were found to increase satisfaction and usability.<sup>17</sup> These insights suggest that the interaction between human support, technology, and institutional policy creates either enabling or disabling digital environments for SWDs.

## Methodology

### Research design

This study adopted a qualitative descriptive and exploratory design to investigate the experiences of SWDs in accessing and using digital library resources in selected Kenyan public universities. The qualitative approach enabled in-depth exploration of participants' lived experiences, perceptions, and the contextual factors shaping digital accessibility. This design was particularly suited to capture nuanced insights into barriers, facilitators, and institutional practices influencing digital inclusion.

### Study sites and selection of universities

Six public universities were purposively selected to reflect diversity in geography, size, institutional age, and investment in digital and disability support services. The selected institutions were Kenyatta University, Egerton University, Maseno University, South Eastern Kenya University (SEKU), Technical University of Mombasa (TUM), and Garissa University. Inclusion criteria required that universities have: (1) a functioning library, (2) a recognized disability support unit, and (3) ongoing use of digital library systems. Institutions lacking these facilities were excluded to ensure relevance and comparability.

The selected universities varied in context and infrastructure. Established institutions such as Kenyatta, Egerton, and Maseno Universities had more developed digital and library systems, whereas newer or remote universities, including SEKU, Garissa University, and TUM, reflected challenges of limited resources and infrastructure. This diversity enabled comparative analysis of digital accessibility initiatives across differing contexts and provided insights into how institutional maturity, policy frameworks, and regional factors influence inclusion for SWDs.

### Study participants and sampling

The study population comprised SWDs, library staff, and disability coordinators. SWDs were purposively sampled with assistance from university Disability Coordinators, focusing on students registered with the library and users of digital library resources. Inclusion criteria for SWDs required either a visual or hearing impairment, as these groups face the most significant barriers to digital access. Students without these disabilities or those who had never used the library's digital resources were excluded.

A total of 54 SWDs participated, including 31 males and 23 females. Among them, 33 students were visually impaired (including both low-vision and blind students) and 21 were hearing impaired, ensuring representation of diverse accessibility experiences. Library staff participants included University Librarians, Acquisition Librarians, Cataloguing Librarians, Reference/Circulation Librarians, and Systems Librarians, offering perspectives on strategic management, resource procurement, accessibility of materials, daily user support, and digital systems. Additionally, six Disability Coordinators contributed insights on policy implementation and institutional support for SWDs.

### Data collection

Data collection was conducted between March and May 2025 using triangulated qualitative methods: in-depth interviews, document review, and field observations.

**Interviews.** Semi-structured, individual face-to-face interviews were conducted with SWDs, library staff, and disability coordinators. Interviews explored experiences with digital resources, staff engagement, institutional infrastructure, and barriers and facilitators of access. A pretested interview guide ensured coverage of key topics while allowing participants to elaborate on personal experiences. Each interview lasted approximately 45–60 min and was audio-recorded with consent. Sign language interpreters facilitated interviews with hearing-impaired participants.

**Document review.** Relevant institutional documents, including library policies, digital access guidelines, disability inclusion strategies, and staff training manuals, were reviewed to assess formal provisions for digital inclusion.

**Field observations.** The researcher conducted systematic non-participant observations in all six university libraries, examining the availability and functionality of assistive technologies, the accessibility of workstations, and staff–SWD interactions. Observations were guided by a structured checklist to maintain consistency and ensure comparable data across institutions.

### Ethical considerations

Ethical approval was obtained from the Mount Kenya University Ethical Review Committee (MKU-ERC), and a research permit was granted by the National Commission for Science, Technology and Innovation (NACOSTI). All participants were briefed on the study objectives, voluntary participation, and confidentiality measures. Informed consent was obtained in writing, with sign language interpreters supporting hearing-impaired participants. Participant identifiers were anonymized, and all recordings, transcripts, and consent forms were stored securely in password-protected digital folders accessible only to the research team. Data will be retained for academic purposes and destroyed after 5 years, in line with ethical standards.

### Data analysis

Data were analyzed using thematic analysis following Braun and Clarke's six-phase framework<sup>22</sup>: familiarization,

coding, theme development, theme review, theme definition, and reporting. Interview transcripts were imported into NVivo 14 to facilitate systematic coding and organization. Themes were derived both inductively, from participants' narratives, and deductively, guided by the study objectives. Document review and field observation data were triangulated with interview findings to enhance validity. Analysis focused on four major areas: (1) digital accessibility experiences, (2) staff engagement and support, (3) institutional infrastructure and policy influence, and (4) barriers and facilitators affecting SWDs' use of digital library resources.

## Results

### Nature of digital accessibility and resource usability

The level of digital accessibility and usability varied considerably across the six universities. University A demonstrated the most inclusive environment, offering assistive technologies such as JAWS and NVDA screen readers, magnification software, and ergonomic furniture. Students reported that these resources enabled independent learning and flexible access. For example, one student explained that being able to access resources remotely allowed them to continue studying while away from campus, highlighting how integrated technologies enhance autonomy and learning continuity:

I like using digital resources because I can access them anytime, especially when travelling home. (SWD6, interview, March 2025)

University B offered moderate accessibility; students noted irregular maintenance of assistive devices and limited staff proficiency in their use. Universities C to F exhibited minimal digital accessibility. Screen readers were often incompatible with online catalogues, digital repositories lacked alt-text, and only a few materials were provided in alternative formats. Students frequently experienced frustration, illustrating the gap between resource availability and practical usability:

Sometimes I get frustrated because I cannot use the screen reader with some files. It makes me not want to try again. (SWD51, interview, March 2025)

**Table 1.** Digital accessibility and user experience.

University	Key accessible resources	Main accessibility gap	Overall user experience
A	JAWS, NVDA, e-journals, Braille signage	Limited training, unlabelled icons	Positive; independent use
B	Screen magnifiers, adaptive workstations	Irregular maintenance	Moderate; occasional support needed
C	E-resources without alt-text	Incompatible screen readers	Low; reliance on peers
D	General e-resources, no ATs	No accessible formats, poor internet	Highly limited; frustration
E	E-books, scanned PDFs	Unreadable for screen readers	Exclusion; disengagement
F	General digital interface	No AT or signage	Complete inaccessibility

Table 1 presents a concise overview of digital accessibility and user experience across the six universities.

### Library staff engagement and support

Library staff engagement was a key determinant of SWDs' experiences. At University A, staff demonstrated empathy, patience, and initiative, regularly providing orientation sessions and one-on-one guidance that enhanced students' independence. One participant emphasized:

The library staff are helpful, making a big difference. (SWD24, interview, March 2025)

In University B, staff were willing to help but lacked technical expertise to optimize assistive technologies. Students from Universities C to F reported minimal staff engagement, describing staff as unaware or redirecting them without assistance. One student commented:

Sometimes I feel invisible in the library. No one knows what I need or how to help. (SWD46, interview, March 2025)

Table 2 highlights the relationship between observed staff practices, gaps, and their impact on SWDs.

### Institutional infrastructure, policies, and implementation gaps

Institutional infrastructure and policy support for digital inclusion varied. Universities A and B had inclusion statements within ICT or library policies, but these lacked implementation guidelines and budget allocations. Universities C to F had no formal frameworks. Observations showed that physical and digital environments were largely inaccessible: tactile signage was absent, portals were difficult to navigate, and no dedicated disability service desks existed. University A was the only institution with active collaboration between the library and the disability office. One student noted:

They talk about inclusion in meetings, but in reality, we still struggle to even log in or get help. (SWD42, interview, March 2025)

No university had conducted digital accessibility audits or maintained a separate inclusion budget, limiting accountability. Table 3 summarizes institutional support and implementation gaps.

### Barriers and facilitators in accessing digital resources

Students faced multiple intersecting barriers. Technological challenges included outdated or incompatible assistive devices and unreliable internet. Environmental barriers involved poor spatial design and a lack of tactile signage. Institutional limitations included weak coordination and minimal training. Individual-level challenges, such as low digital literacy, led students to rely heavily on peers. One participant shared:

We depend on each other to figure things out. Sometimes even other students don't know, so we just give up. (SWD27, interview, March 2025)

Facilitators included proactive staff, peer support, orientation sessions, and basic adaptive tools, which improved confidence and independence. Table 4 outlines the key barriers and facilitators.

Digital inclusion was most effective in universities that fostered empathetic staff cultures, provided basic assistive technologies, and supported students actively. Across other institutions, systemic barriers, policy gaps, infrastructural inadequacies, and limited funding restricted sustainable access. The results indicate that inclusive digital environments require the integration of technology, staff competence, and institutional policy, rather than relying on isolated initiatives.

## Discussion of findings

This study highlights considerable disparities in the digital library experiences of SWDs across public universities in Kenya. While select institutions have demonstrated progress toward digital inclusion, the overall landscape remains uneven, characterized by technological inadequacies, variable staff competence, and weak institutional support structures. The findings underscore that effective digital

**Table 2.** Library staff engagement and support.

University	Observed staff practices	Gaps	Impact on SWDs
A	Empathetic, active guidance	Need for advanced AT training	Increased confidence
B	Helpful but limited tech know-how	No refresher courses	Moderate inclusion; dependency
C	Passive assistance	No AT knowledge	Frustration; disengagement
D	Redirected students, minimal empathy	No disability desk	Exclusion; low morale
E	Occasional ICT staff support	Weak coordination	Inconsistent support
F	No awareness or support	No training	Complete disengagement

**Table 3.** Institutional infrastructure and policy.

University	Policy/framework	Implementation status	Key gaps
A	Digital inclusion in library policy	Partial	Limited funding; no audit
B	ICT policy with inclusion reference	Inconsistent	No follow-up mechanisms
C	None	None	No inclusion budget
D	Equity clause in strategic plan	Not operational	No disability data
E	None	None	Weak collaboration
F	None	None	No accessibility plan

inclusion depends on the interplay between accessibility, human capacity, infrastructure, and policy implementation.

Digital accessibility emerged as a critical determinant of user satisfaction and engagement. Institutions with integrated assistive technologies, functional digital platforms, and structured training fostered autonomy, confidence, and greater participation among SWDs. These observations are consistent with previous studies<sup>11,23</sup> that emphasize the role of well-supported assistive technologies in promoting academic independence. Conversely, obsolete devices, incompatible formats, and inaccessible repositories limited engagement, reflecting broader concerns regarding the absence of universal design principles in higher education.<sup>7,24</sup> The findings highlight that accessibility extends beyond mere provision of digital content to ensuring usability, compatibility, and functional integration of assistive technologies.

Library staff engagement was identified as another central factor influencing digital inclusion. Institutions with staff who demonstrated technical proficiency, awareness, and proactive support facilitated positive user experiences, aligning with literature emphasizing staff attitudes and accessibility literacy as key enablers of equitable information access.<sup>8,10</sup> Conversely, low staff capacity or passive engagement contributed to exclusionary practices, reflecting attitudinal and systemic barriers identified in prior research.<sup>9,19</sup> These results suggest that targeted professional development and institutional support for staff are critical to sustaining inclusive digital practices.

The study also underscores deficiencies in institutional infrastructure and policy frameworks. While some universities referenced inclusion or equity in policies, the absence of operational mechanisms, dedicated budgets, and

accountability systems limited the practical realization of these commitments. This aligns with the concept of “symbolic inclusion”<sup>25</sup> and mirrors challenges reported in other developing country contexts, where weak interdepartmental coordination undermines policy effectiveness.<sup>12,13</sup> Embedding systematic accessibility audits, inter-unit collaboration, and resource accountability into institutional governance emerges as essential for sustainable digital inclusion.

Multiple, intersecting barriers, including technological, environmental, institutional, and personal factors, constrained SWDs’ engagement with digital resources. However, facilitators such as supportive staff, peer networks, targeted orientation, and even minimal adaptive tools enhanced participation, reinforcing the importance of institutional empathy, capacity-building, and user empowerment.<sup>10</sup> The findings indicate that inclusion is achievable when technology, human support, and governance are deliberately aligned.

## Strengths and limitations

A key strength of this study is its multi-university scope, allowing for comparison of institutional practices and identification of systemic patterns. The triangulation of interviews, observations, and document analysis enhanced the credibility of interpretations. Limitations include potential selection bias, as participants who were more engaged with digital resources may have been overrepresented. Additionally, the study did not quantitatively measure the actual usability of specific technologies, which could limit generalizability. Self-reported experiences may also be subject to recall or social desirability biases.

**Table 4.** Barriers and facilitators of digital resource use.

Category	Key barriers	Corresponding facilitators
Technological	Outdated/incompatible ATs, unstable internet	Upgraded software, adaptive workstations
Environmental	Poor signage, inaccessible layouts	Ergonomic desks, designated quiet zones
Institutional	Weak coordination, lack of policy enforcement	Collaboration between library and disability office
Individual	Low digital literacy and awareness	Peer mentorship, student-led awareness sessions

## Implications

The study demonstrates that digital inclusion is a multidimensional process requiring coordinated efforts across technology, policy, staff capacity, and user empowerment. Sustainable inclusion demands holistic strategies that integrate assistive technology, professional development, institutional accountability, and a culture of empathy. These insights provide a robust foundation for developing frameworks aimed at promoting equitable and sustainable digital access for SWDs in higher education.

## Conclusion

The study revealed that digital inclusion for SWDs within public university libraries remains uneven and largely dependent on isolated institutional efforts rather than systemic strategies. While some universities demonstrated encouraging progress through the provision of assistive technologies, structured training, and supportive staff engagement, the broader landscape is characterized by fragmented implementation, inadequate infrastructure, and weak policy enforcement. The results show that the mere availability of digital resources does not guarantee accessibility or usability. True inclusion requires functional integration of assistive technologies, alignment of digital platforms with universal design principles, and sustained technical and human support. The experiences of SWDs indicated that where staff were empathetic, digitally competent, and responsive, students exhibited greater confidence and independence. In contrast, environments defined by untrained personnel and technological incompatibilities perpetuated frustration and disengagement. Institutional policies, though present in some cases, often lacked operational depth, funding, and accountability mechanisms. This policy–practice gap continues to undermine the intent of inclusion. As demonstrated, the absence of accessibility audits, interdepartmental collaboration, and structured monitoring results in symbolic rather than substantive inclusion. Therefore, achieving digital inclusivity requires embedding accessibility into institutional governance, supported by measurable targets, resource allocation, and continuous evaluation.<sup>26–30</sup>

## Recommendations

This study reveals commendable progress toward digital inclusion for SWDs in Kenyan public universities but also exposes persistent gaps in policy implementation, infrastructure, and staff capacity. The following actions are recommended to enhance inclusivity and sustainability.

Universities should develop and enforce clear digital accessibility policies aligned with WCAG 2.2 and Kenya's Digital Accessibility Framework. Regular accessibility audits, adequate budgeting, and the formation of inclusive committees linking library, ICT, and disability units are essential to bridge policy–practice gaps.

Digital platforms must adopt universal design principles and include features such as screen-reader compatibility, captions, and alt-text. Universities should upgrade outdated assistive tools, ensure reliable internet access, and provide adaptive workstations with ergonomic and tactile features.

Continuous staff training on assistive technologies and inclusive communication should be institutionalized. Each library should designate an Accessibility Champion to coordinate initiatives and support SWDs. Accessibility and universal design concepts should also be embedded in Library and ICT curricula.

Libraries should provide orientation and refresher programs to build SWDs' digital skills and confidence. Mechanisms for feedback and co-design should be established, alongside peer mentorship programs that promote knowledge sharing and inclusion.

The Commission for University Education and Ministry of Education should create a National Framework for Inclusive Digital Access to standardize practices. Collaboration in research, innovation, and the creation of a National Accessibility Repository would further support equitable access across universities.

## Acknowledgments

The authors wish to thank the editors of *Technology and Disability* for their time, guidance, and constructive feedback during the review process.

## ORCID iD

Stephen Maina  <https://orcid.org/0009-0000-5444-2726>

## Ethical considerations

Ethical approval was obtained from the Mount Kenya University Ethical Review Committee (MKU-ERC), and a research permit was granted by the National Commission for Science, Technology and Innovation (NACOSTI).

## Consent to participate

All participants were briefed on the study objectives, voluntary participation, and confidentiality measures. Informed consent was obtained in writing, with sign language interpreters supporting hearing-impaired participants. Participant identifiers were anonymized, and all recordings, transcripts, and consent forms were stored securely in password-protected digital folders accessible only to the research team. Data will be retained for academic purposes and destroyed after 5 years.

## Funding

This research was funded personally by the corresponding author; no external funding was received.

## Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## References

- Johnson S and Lee T. Digital learning strategies for transcending physical and temporal barriers in education. *Journal of Educational Technology and Online Learning* 2022; 10(4): 215–230.
- Maina S, Svard P and Mwai N. A framework to promote digital inclusion for students with disabilities in government funded universities. *International Journal of Knowledge Content Development & Technology* 2025; 16(2): 07–31.
- Maina S, Svard P and Mwai N. Implementing digital inclusion for students with disabilities at the university of Nairobi library: a practical case study. *Libr Hi Tech News* 2025b; 42(8): 1–4. <https://doi.org/10.1108/lhtn-07-2025-0121>
- Memon FN and Memon SN. Digital divide and equity in education: bridging gaps to ensure inclusive learning. In: *Impact of digitalization on education and social sustainability*. IGI Global, 2025, pp. 107–130.
- Gil TO Jr. Inclusive education in higher education institutions: a conceptual framework for implementation in support of sustainable development goals (SDGs). *Indonesian Journal of Comm and Spec Needs Edu* 2025; 5(2): 107–120.
- Ncube MM and Ngulube P. Bridging the information gap: accessibility of assistive technologies for patrons. *IFLA J* 2025; 51(4): 928–942.
- Othman AK and Al Mutawaa N. Towards inclusive academic libraries: the role of assistive technologies in serving users with disabilities in Kuwait. *Global Know, Memory & Comm* 2023; 72(6/7): 545–561.
- Ditlhale TW and Johnson LR. Assistive technologies as an ODeL strategy for promoting support for students with disabilities. *Technol Disabil* 2022; 34(3): 153–163. <https://doi.org/10.3233/tad-220376>
- Beyene A, Mekonnen AT and Giannoumis GA. Inclusion, access, and accessibility of educational resources in higher education institutions: exploring the Ethiopian context. *Int J Incl Educ* 2023; 27(1): 18–34. <https://doi.org/10.1080/13603116.2020.1817580>
- Zaid Y, Olatise O and Alabi A. OER accessibility for students with visual disabilities in higher education in the era of open knowledge. *Mousaion: South African J of Inform Stud* 2024; 42(1): 21.
- Salahuddin M. Accessibility of e resources in university libraries for students with disabilities: a study in Bangladesh. *Int J Libr Inf Sci* 2022; 12(2): 45–58.
- Kiambati FG, Juma SW and Wawire BA. Accessibility of digital systems in information retrieval by users with visual impairment. *Qual Assur Educ* 2024; 32(2): 197–214. <https://doi.org/10.1108/qa-e-11-2023-0190>
- Cherotich C, Cheptoo KP and Obare RM. Challenges in accessing digital resources among students with visual impairment: the case of Haramaya University, Ethiopia. *Br J Vis Impair* 2024; 42(1): 177–192.
- Kulekpo BK. *Library access and use for users with special needs at the University of Education, Winneba*. Doctoral dissertation, University of Ghana, 2021.
- Arora R. Access of students with disabilities (SWDs) to higher education in India with special reference to Panjab University, Chandigarh, India. *Indian J Publ Adm* 2023; 69(2): 360–371. <https://doi.org/10.1177/00195561231154387>
- Luvale BN. Digital literacy skills for students with visual and hearing impairments in Kenyan public universities. *Libr Hi Tech News* 2025; 42(3): 25–31. <https://doi.org/10.1108/lhtn-10-2024-0190>
- Singh JAYS. *Students with disabilities at the University of KwaZulu-Natal—An integrated approach towards awareness and changing attitudes*. Doctoral dissertation, University of KwaZulu-Natal, 2017. Available from: [https://ukzndspace.ukzn.ac.za/bitstream/handle/10413/16450/Singh\\_Jayshree\\_2017.pdf](https://ukzndspace.ukzn.ac.za/bitstream/handle/10413/16450/Singh_Jayshree_2017.pdf)
- Scoulas JM. College students' perceptions of sense of belonging and inclusion at the academic library during COVID 19. *J Acad Librarian* 2021; 47(6): 102460.
- Hamad F. Digital inclusion of students with disabilities in digital information services at academic libraries: the University of Jordan case. *Libr Q* 2023; 93(3): 313–332. <https://doi.org/10.1086/725067>
- Commission for University Education. *Universities' standards and guidelines, 2014*. Commission for University Education, 2014. Available from: [https://www.cue.or.ke/index.php?option=com\\_phocadownload&view=category&id=16:standards-and-guidelines&Itemid=494](https://www.cue.or.ke/index.php?option=com_phocadownload&view=category&id=16:standards-and-guidelines&Itemid=494)
- Mosha NF. The role of artificial intelligence tools in enhancing accessibility and usability of electronic resources in academic libraries. *Libr Manag* 2025; 46(1/2): 132–157. <https://doi.org/10.1108/lm-08-2024-0088>
- Braun V, Clarke V, Hayfield N, et al. Doing reflexive thematic analysis. In: *Supporting research in counselling and psychotherapy: qualitative, quantitative, and mixed methods research*. Springer International Publishing, 2023, pp. 19–38.
- Abu Qaadan A, Hamad F and Fakhouri H. Facilitating digital accessibility for students with disabilities in information services at Jordanian academic libraries. *Libr Manag* 2024; 45(8-9): 527–546.

24. Smadi H. Digital library services and accessibility for students with disabilities: a Jordanian case study. *Libr Philos Pract*. 2022; 1–20.
25. Alaban A. Accessibility tools for students with disabilities in university libraries. *Library Progress International* 2024; 44(1s): 17–32.
26. GoK (Government of Kenya). *Status report on disability inclusion in Kenya, 2021: Implementing the global disability summit commitments 2018*. Government of Kenya, 2021.
27. Hamad F, Al Fadel M and Shehata AMK. The level of digital competencies for the provision of smart information services at academic libraries in Jordan. *Global Know, Mem and Comm* 2024; 73(4/5): 614–633.
28. Kumari SKV, Lavanya K, Vidhya V, et al. *Research methodology*. Vol. 1. Darshan Publishers, 2023.
29. Luvale BN. *Institutional policies for persons living with disabilities in accessing information resources*. Doctoral dissertation, Dedan Kimathi University of Technology Library, 2022.
30. The National Council for Persons with Disability (NCPWD). *Disability landscape analysis: A comprehensive landscape analysis of disability at the county and national levels in Kenya for informed policy and full societal inclusion*. NCPWD, 2024.