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From Language Barriers to Linguistic Bridges: A Discourse Analysis of Equity in Zambia's Digital Education Platforms

Siame Pethias
Department of Literature and Languages, Kwame Nkrumah University, Kabwe, Zambia
psiame@yahoo.com
https://orcid.org/0000-0003-3203-5307

Chisenga, Raphael Prince Akeem
Department of Literature and Languages, Kwame Nkrumah University, Kabwe, Zambia
raphakeem@gmail.com

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***Corresponding Author**:
psiame@yahoo.com

Abstract
As Zambia continues to embrace digital education initiatives such as e-learning portals, EduTV, and mobile-based learning platforms, language has become a central but often overlooked factor in determining the success and inclusivity of these systems. Despite the country's rich linguistic diversity, English remains the dominant language of instruction, creating barriers for learners who are more proficient in indigenous languages. This study investigates how language use and discourse patterns on Zambia's digital learning platforms contribute to or hinder equitable access to education. Drawing on Fairclough's Critical Discourse Analysis framework and the theory of Linguistic Capital, the study examines the textual and interactive content of national digital learning resources and conducts focus group discussions with learners from different linguistic backgrounds. The research reveals that English-dominated discourse, formal terminology, and abstract academic language alienate learners, particularly in rural and peri-urban areas. In contrast, platforms that incorporate local languages, informal tone, and culturally relevant examples show higher learner engagement and retention. The findings highlight how digital language practices can either reinforce educational exclusion or serve as tools for inclusion and empowerment. The study concludes that for digital education in Zambia to be genuinely transformative, it must move from language barriers to linguistic bridges by adopting inclusive discourse strategies that recognise and value Zambia's multilingual realities. Practical recommendations are made for content creators, education policy developers, and digital education stakeholders on how to design linguistically accessible and equitable learning environments.

Introduction

Over the past two decades, Zambia's education system has seen significant improvement in digital learning initiatives, including EduTV, e-Learning, and mobile-based learning. These strategies are part of the comprehensive digital migration plan to transform education through the Digital Agenda. This, however, does not go without challenges, especially in multilingual settings such as Zambia. Accelerated by the COVID-19 pandemic, this digital shift positioned e-learning as a strategic avenue for educational advancement (UNESCO, 2021). Zambia's diverse linguistic landscape, with over 70 local languages, English remains the official language of instruction alongside seven other regional official languages as classified by the Guthrie

system of Bantu languages as follows: Bemba (Zone M), Nyanja (Zone N), Tonga (Zone M), Lozi (Zone K), Lunda (Zone L), Kaonde (Zone M), and Luvale (Zone K) (Mulenga, 2025; Goma, 2019). This policy has been revisited over the past six decades since Zambia's independence, as it continues to marginalise local language varieties while favouring English (Chanda, 2022; Mwansa, 2020). What remains underexplored is the optimism around digital education, especially on the role it plays in shaping equal policy participation and learning outcomes. The Zambian Ministry of Education's digital strategy (MoGE, 2021) recognises that there is a need for equitable access to this type of education, but it offers limited guidance on how linguistic inclusivity can be integrated into digital platforms.

Most of the recent studies around digital inclusion and accessibility globally and regionally indicate that linguistic barriers significantly affect learner engagement in Zambia's online learning environments (Simasiku, 2019; Trudell & Young, 2020; Sakala & Banda, 2022). Findings from Sakala & Banda (2022) revealed that learners who were more proficient in local languages usually struggled to interact with English-dominated interfaces and content. This challenge creates what Banda (2020) described as a *digital-linguistic divide*, where language acts not only as a technological but also a sociocultural barrier to educational inclusion. Such findings resonate with the broader concerns across African education research that Anglophone and Francophone policies perpetuate social inequities and hinder cognitive engagement, especially in multilingual settings (Simasiku, 2019; Trudell & Young, 2020).

This study, therefore, addresses this critical gap by examining how language use and discourse practices shape educational equity on digital education platforms in Zambia. By drawing insights from Fairclough's (2013) Critical Discourse Analysis (CDA) and Bourdieu's (1991) theory of linguistic capital, this paper explores how English-dominated discourse reproduces existing inequalities, and how inclusive linguistic strategies could boost engagement and participation. In line with the Ministry of Education and Skills Sector Plan 2022–2026 (MoGE, 2022), which emphasises inclusive and resilient education, this study argues that moving beyond access to encompass linguistic justice guarantees equitable digital education. Through the textual and interactive features of national digital learning resources analysis, this study sought to uncover how discourse can either reinforce marginalisation or serve as a bridge toward transformative, inclusive, multilingual digital education. Finally, the study contributes to reconsidering the language policy in digital education as a foundation for equity and inclusion in Zambia's evolving education ecosystem.

This study is guided by the following research objectives:

i. To examine the discourse patterns and language practices used on Zambia's major digital learning platforms.
ii. To analyse how these linguistic practices reinforce or challenge existing educational inequities.
iii. To explore learner and teacher experiences regarding language accessibility and engagement on digital platforms.
iv. To propose linguistically inclusive strategies for enhancing equity in Zambia's digital education ecosystem.

On the other hand, it answers the following research questions:

i. How is language used discursively on Zambia's digital education platforms, and what power relations does this reflect?

ii. In what ways do current language practices on these platforms contribute to the marginalisation or inclusion of learners from diverse linguistic backgrounds?
iii. What are the experiences of learners and educators regarding language accessibility and cultural relevance in digital learning?
iv. How can digital education platforms be redesigned to serve as linguistic bridges rather than barriers?

Literature Review

Global Perspectives: Language, Power, and Digital Equity

Digital education has been praised as a democratising force capable of bridging gaps in access to knowledge. Besides its promise of universal access, scholars have increasingly revealed the persistence of linguistic and cultural hierarchies that reproduce rather than dismantle educational inequality (Bozkurt et al., 2022; Wester, 2024; Fairclough, 2013). Fairclough's (2013) *Critical Discourse Analysis (CDA)* emphasises how language operates as a form of social practice, embedding ideology within discourse structures that sustain power relations. In the context of digital education, this insight reveals how Eurocentric interfaces and pedagogies reinforce global linguistic dominance, marginalising speakers of other languages.

Pennycook (2010) further advances this argument by framing language as a "local practice," which entails that linguistic use is inseparable from its sociocultural context. However, global educational platforms often use English as a universal, neutral, or superior medium, replacing the local knowledge systems embedded in learners' mother tongues. Warren and Ward (2022) echo this concern, stating that equitable language teaching practices demand negotiation between local linguistic realities and global standards. However, as Vaishnav (2025) warns, technology often deepens linguistic divides rather than resolving them, as digital platforms seemingly designed for inclusion may accidentally exclude learners with limited English proficiency.

The COVID-19 pandemic intensified this issue, revealing the weakness of linguistic inclusivity in online learning environments (Bozkurt et al., 2022). As online platforms enabled educational continuity, their reliance on English and Western-centric pedagogies left millions of learners linguistically alienated. From a CDA perspective, these digital spaces are not simply learning environments; they are discursive fields where linguistic capital (Bourdieu, 1991) translates into educational privilege.

Recent global initiatives promoting inclusive education through e-learning for marginalised groups have begun to address these inequities. Arcinas (2024) emphasises that for Indigenous and linguistically diverse populations, inclusive design must extend beyond translation to include culturally resonant content and user interaction. Similarly, Djité (2008) underscores that language is not only a medium of instruction but also a key determinant of cognitive access and identity formation. Collectively, these global studies reveal a fundamental tension: while digital education purports to democratise learning, it simultaneously perpetuates linguistic hierarchies unless explicit strategies for multilingual inclusion are embedded in design and policy.

African Perspectives: Linguistic Capital, Digital Literacy, and Structural Inequities

Across Sub-Saharan Africa, the link between language and technology has become an increasingly important arena for educational equity. Researchers observed that colonial linguistic legacies continue to shape the language policies in most African countries, underpinning digital education systems (Adam, 2021; Makoe, 2018; Trudell, 2016). Languages such as English, French, and Portuguese remain the dominant medium of instruction, despite the rich linguistic diversity of the continent. According to Adam (2021), he observes that this dominance continues to perpetuate what he calls "digital linguistic exclusion," where access to digital learning is stratified along lines of language proficiency.

Learners in many African countries have various linguistic repertoires that do not align with the monolingual assumptions of most digital platforms. Makoe (2018) demonstrates how digital technologies deployed with multilingual functionality can enhance access and communication for learners who are bilingual and likely to suffer exclusion. However, the status quo remains that most national platforms remain mono-centric, positioning indigenous languages as alternatives rather than integral to digital pedagogy. This echoes Fairclough's (2013) argument that discourse practices maintain social hierarchies by legitimising certain linguistic forms over others.

Wester (2024) conceptualises the shift "from barriers to bridges" in digital education as an important movement toward inclusive linguistic design that values multiple modes of expression, textual, oral, and cultural. However, Trudell (2016) and Adam (2021) observed that most African education policies often regard multilingual integration as a logistical challenge rather than as an asset toward national development. Bourdieu's (1991) theory of *linguistic capital* is mainly revealing here: proficiency in global languages like French, Portuguese, Mandarin, and English serves as symbolic capital, allowing access to elite educational opportunities, while local languages are marginalised. This dynamic is vividly apparent in online learning spaces where English or French proficiency becomes the gatekeeper to digital participation (Makoe, 2018; Adam, 2021). Such findings underscore the urgency of developing multilingual digital ecosystems that validate and leverage African linguistic resources rather than suppress them.

Zambian Perspectives: Language, Equity, and Digital Transformation

Language policy and educational equity in Zambia are deeply related due to its rich historical linguistic landscape. The current language policies are guided by the 2013 Outcome-Based Curriculum (MOE, 2013) and the 2024 Competence-Based Curriculum (MOE, 2023), where English is the official language of instruction. While the former uses English from upper primary level onwards, the latter uses local languages from early childhood to Grade Four, despite the recognition of seven major Zambian languages for early-grade teaching (Banda, 2018; Kangwa, 2020). These policies create a pedagogical tension where the official seven indigenous languages are valued rhetorically, but institutional and digital practices continue to privilege the English language (Chanda, 2021).

Recent studies on local language practices in Zambia show that linguistic hybridity is a symbol of everyday communication. According to a study by Kangwa (2020), it demonstrates how English words are adapted into Tonga speech, reflecting both linguistic resilience and subordination. From a CDA perspective, this adaptation of English words illustrates how linguistic capital is negotiated in contexts of structural inequality (Fairclough, 2013; Bourdieu,

1991). Furthermore, Chanda (2021) extends this argument into the cultural domain, showing how digital spaces often neglect the symbolic power and importance of local linguistic heritage, which he refers to as "portable inheritance." This means that as digital education seeks to modernise learning, it may also act as an agent for cultural extinction. It must be stressed that the digital classroom should become a site where language mediates not only access to knowledge but also recognition of identity.

Recent evidence from Banda's study revealed that local education initiatives still suggest that multilingual integration remains minimal in Zambia's digital platforms (Banda, 2018). While the national education policy promotes inclusivity, implementation gaps persist, particularly in digital literacy and STEM programs. Moreover, the status quo indicates that linguistic accessibility is often treated as secondary to technological infrastructure, resulting in platforms that are functionally advanced but socially exclusionary (Adam, 2021; Makoe, 2018). There is, however, emerging potential for most of the digital learning platforms for multilingual integration, though some remain isolated and under-researched. No comprehensive study has systematically examined how language use and discourse practices within Zambian digital education platforms reinforce or challenge linguistic inequities, despite growing evidence from classroom-based research on multilingualism (Kangwa, 2020; Banda, 2018).

This review reveals that while global and African studies explored the role language plays in digital education, there is a critical gap in focused research on how digital discourse practices in Zambia reproduce or transform educational inequality. As existing studies have examined language policy, linguistic adaptation, and mobile learning (Adam, 2021; Makoe, 2018; Banda, 2018), few have analysed the status of discursive construction of equity in digital environments in Zambia through the lens of Fairclough's Critical Discourse Analysis and Bourdieu's theory of linguistic capital.

Therefore, this study filled this significant gap by offering a Critical Discourse analysis of Zambia's leading digital learning platforms, such as *Mwabu*, *eLearning Zambia*, and *Notesmaster*. This study sought to understand how linguistic choices shape access, participation, and power. It also positions itself to investigate the status of Zambia's digital linguistic equity while contributing regionally grounded insights into how language can serve as both a barrier and a bridge in educational transformation.

Theoretical Framework

This study is anchored in Critical Discourse Analysis (CDA) as developed by Norman Fairclough (1989, 1992, 2013) and informed by Pierre Bourdieu's (1991) theory of Linguistic Capital. These complementary frameworks provide the analytical foundation for exploring how language use and discourse practices within Zambia's digital education platforms shape educational equity, access, and participation.

Origins and Proponents of CDA

CDA emerged in the late 1980s from the broader field of critical linguistics, pioneered by scholars such as Fowler, Kress, and Fairclough, who sought to link language with ideology and power. Fairclough (2013) formalised CDA as a method for uncovering the implicit power relations embedded in discourse, arguing that language both reflects and constructs social structures. Concurrently, Bourdieu (1991) introduced the notion of *linguistic capital*, conceptualising language as a form of symbolic power that legitimises certain speech forms

and marginalises others. Together, these frameworks examine how linguistic choices mediate access to social goods such as education, status, and opportunity.

Conceptualising CDA: Principles and Dimensions

CDA is premised on three interrelated principles: the first principle is language as social practice, which implies that language is not neutral but shaped by social, political, and cultural forces. The second principle deals with ideology and power. This shows that discourse reproduces or challenges dominance by embedding ideology within linguistic structures. The third principle deals with the Text–Discourse–Society Interface. This shows that analysis must connect textual features (vocabulary, grammar) with discursive practices (production and consumption of texts) and sociocultural contexts (institutions, policy, and identity).

Fairclough's three-dimensional model, namely, textual, discursive, and sociocultural analysis, guides this research by linking micro-level language use with macro-level social meanings.

Practical Application to the Present Study

In this study, CDA was applied to examine how Zambia's leading digital learning platforms (Mwabu, eLearning Zambia, and Notesmaster) construct linguistic norms and shape learner identities. Textual analysis focused on language choices, tone, and accessibility; discursive analysis explored how platform design reinforces or resists English dominance; and sociocultural analysis interrogated how linguistic hierarchies reproduce inequality. By integrating CDA with Bourdieu's concept of linguistic capital, the framework illuminates how English-dominant discourse both mirrors and sustains power asymmetries within Zambia's digital education ecosystem.

Methodology

Research Design

This study adopted a qualitative case study design (Yin, 2018) anchored in Fairclough's Critical Discourse Analysis (CDA). The case study approach was deemed appropriate for an in-depth exploration of language practices across specific digital platforms within their real-world context. The research was conducted within a constructivist paradigm, acknowledging that language and meaning are socially constructed and that multiple perspectives exist regarding linguistic equity.

Data Sources and Collection

Data were collected from two primary sources between June and December 2024 to ensure triangulation and depth. The study used document analysis (Platform content). Textual and multimodal data were systematically collected from three purposively selected national digital learning platforms: *Mwabu*, *eLearning Zambia*, and *Notesmaster*. These platforms were selected due to their official recognition and widespread use in Zambian schools. For each platform, the following were captured: Firstly, interface text- navigation menus, instructions, and help sections. Secondly, learning materials-A sample of 15 lesson transcripts (5 from each platform) from core subjects (Mathematics, Science, and History) at the Grade 7 level was downloaded or transcribed from EduTV broadcasts. Thirdly, multimodal content- Screenshots

of key pages and descriptive notes on audio/video materials were taken to analyse the integration of language with visual elements.

Data were also collected through Focus Group Discussions (FGDs). To capture lived experiences, eight focus group discussions were conducted with two distinct participant groups. The first group was for learners. Six FGDs were held with Grade 7 learners (n=36 total, 6 per group) purposively sampled from public schools in Lusaka (urban), Ndola (urban), Kabwe (peri-urban), Kitwe (urban), and Kapiri Mposhi (rural). Selection criteria included variation in linguistic background (prioritising speakers of Bemba, Nyanja, Tonga, and Lozi) and regular use (at least once a week) of one of the studied platforms. The second group was for Teachers. Two FGDs were held with teachers (n=12 total) who integrated digital platforms into their pedagogy. Participants were recruited from the same schools to provide educator perspectives. FGDs were semi-structured, guided by themes derived from the research questions, and conducted in a mix of English and participants' preferred local languages to encourage authentic expression. All discussions were audio-recorded and transcribed verbatim.

Participants and Sample Size

A total of 48 participants contributed to the study. In qualitative research, sample size is determined by the principle of data saturation (Guest et al., 2006), where data collection ceases when no new themes or insights emerge. Recruitment continued until saturation was achieved for both learner and teacher groups, as confirmed through preliminary analysis. The final sample provided rich, information-laden cases from diverse geographical and linguistic contexts.

Data Analysis

Data analysis was an iterative process following Fairclough's (2013) three-dimensional CDA framework. The first dimension is textual analysis (Description). Platform documents and FGD transcripts were coded line-by-line for linguistic features (e.g., language choice, formality, use of technical jargon, code-switching) and discursive strategies. The second dimension was discursive practice analysis (Interpretation). Codes were categorised into themes related to the production, distribution, and consumption of digital texts. This involved analysing how platform design choices (e.g., English-only interfaces) shaped interaction and how learners interpreted and negotiated these texts. The third dimension was the sociocultural practice analysis (Explanation). Emerging themes were interpreted in relation to the broader social context, drawing on Bourdieu's linguistic capital to explain how observed discourse practices reproduced or challenged existing power structures and educational inequities.

Data analysis was supported by NVivo software for thematic organisation. To enhance trustworthiness, investigator triangulation was employed, with both researchers independently coding a subset of data before reconciling interpretations. Member checking was conducted by sharing preliminary themes with a subset of participants for validation.

Ethical Considerations

Ethical approval was obtained from the Kwame Nkrumah University Institutional Review Board. Informed consent (and assent for minors) was secured from all participants. Anonymity and confidentiality were maintained through the use of pseudonyms and secure data storage.

Note on Numerical Summaries

The study presents descriptive numerical summaries (e.g., mean scores in Table 4.1) not as quantitative results for generalisation, but as heuristic devices to synthesise and visually represent qualitative observations from the systematic comparative analysis of the three platforms. These scores were derived from consensus-based researcher ratings (on a 1-5 scale) of each platform against clearly defined qualitative indicators (e.g., "Multilingual Support"), based on the aggregated evidence from document and FGD analysis. They serve to illustrate patterns and degrees of variation across cases, consistent with case study methodology (Stake, 1995).

Results and Discussion

The findings are organised according to the primary research questions, integrating evidence from both platform document analysis and focus group discussions.

Discourse Patterns and Power Relations on Digital Platforms (RQ1)

This theme responded to the first research question (RQ1). Analysis of the three platforms revealed a consistent pattern of English linguistic dominance, which naturalises English as the default medium of academic discourse.

The first result was textual evidence**.** All platforms (*Mwabu, eLearning Zambia, Notesmaster*) used English for core interface navigation, instructions, and the majority of content. As one learner from Kabwe noted, *"Even the button to start the lesson says 'Begin'... if you don't know that word, you are already stuck."* Subject materials, especially for Mathematics and Science, were exclusively in English with formal, academic terminology. This aligns with Fairclough's (2013) concept of discourse embedding ideology, positioning English as the "neutral" language of knowledge.

The second finding was discursive practice. Platform architecture reinforced this hierarchy. *E-learning Zambia* used templated designs, while *Mwabu's* teacher-centric model positioned the English-speaking teacher as the primary knowledge authority. *Notesmaster* showed slight discursive flexibility by hosting some user-generated content, but its core structure remained English-only.

The third result was sociocultural power relations. This English-dominated discourse functions as linguistic capital (Bourdieu, 1991). FGDs revealed that learners from English-speaking urban households navigated platforms with ease, while those from rural, indigenous-language-dominant homes experienced these spaces as alienating. A teacher from Kapiri Mposhi explained, *"The platform assumes a child who is already comfortable with English. It doesn't teach in English; it teaches through English, which is a big difference for our pupils."* This creates a digital replication of existing social inequities.

Table 1: Comparative Analysis of Linguistic and Equity-Related Indicators

Indicator	Mwabu	eLearning Zambia	Notesmaster	Researcher Rating (1-5)	Interpretation
English Dominance	English-only interface and content. No local language options.	English-only, uses internationalised templates.	Mainly English-dominant but allows for user-generated content in explanations.	4.67 (Very High)	English is systematically privileged as the medium of instruction and interaction across all platforms.
Multilingual Support	No integration of local languages.	No multilingual tools (e.g., subtitles, glossaries).	Some flexibility via user content, but the core structure is English-only.	1.33 (Critically Low)	Support for Zambia's official indigenous languages is minimal to non-existent.
Accessibility for Low-Proficiency Learners	High cognitive load due to formal English and teacher-driven pace.	Text-heavy, assumes English fluency.	Peer explanations in discussions can provide simpler paraphrasing.	2.33 (Limited)	Design features do not adequately scaffold learning for pupils with limited English proficiency.
Cultural Localisation	Minimal contextual adaptation; some local illustrations in lower grades.	Weakest localisation; content often uses generic or foreign examples.	Most localised due to Zambian student-created notes and examples.	Varies (Notesmaster Strongest)	Cultural relevance is incidental rather than by design, except where user-driven.
Learner Autonomy	Teacher-driven platform; limited learner control.	Moderate autonomy within a fixed, linear path.	Highest autonomy; community-led content encourages exploration.	Varies (Notesmaster Strongest)	Autonomy is constrained by linguistic and structural design choices.

It should be noted that the ratings are qualitative researcher assessments based on systematic document and FGD analysis, used for illustrative cross-case comparison.

Marginalisation and Inclusion of Linguistically Diverse Learners (RQ2)

This theme responds to the second research question (RQ2). The findings clearly demonstrate how current practices marginalise non-dominant language speakers while hinting at pathways for inclusion.

The study reveals mechanisms of marginalisation. The near-absence of multilingual support (Table 1, M=1.33/5) was a critical barrier. Learners described struggling with "big English words" in science lessons, leading to disengagement. One learner from Kitwe shared, *"I just click through to finish, but I don't understand."* This creates a digital-linguistic divide (Banda, 2020), where access to technology does not guarantee access to learning.

The study shows emerging bridges of inclusion. Instances where platforms incorporated inclusive strategies showed positive effects. On *Notesmaster*, lessons that used local analogies (e.g., explaining ratios using "sharing mealie-meal at home") received positive feedback. FGD participants unanimously agreed that an informal tone, humour, and code-switching in audio explanations would significantly reduce anxiety and improve comprehension. As a teacher from Lusaka stated, *"When we mix languages or use a familiar example, you see the lights go on in their eyes."*

Learner and Educator Experiences with Language and Culture (RQ3)

This theme is a response to the third research question (RQ3). The FGD data provided rich insights into the human impact of digital language policies.

The study reveals experiences of alienation. Learners from rural and peri-urban areas frequently used words like "foreign," "difficult," and "not for us" to describe the platforms. This alienation was tied to both language and cultural content. A history lesson on the "Unification of Germany" was cited as less relatable and harder to recall than local history.

The study also reveals the value of cultural relevance. Both learners and teachers strongly correlated cultural resonance with engagement and retention. Lessons incorporating Zambian contexts, local markets, agriculture, or historical figures were described as "bringing learning closer to home" and were better remembered. Teachers noted that *Mwabu's* localised illustrations for younger grades increased attention spans.

The study further reveals instances of teacher challenges. Educators highlighted a lack of institutional support as a key barrier. They cited inadequate training in digital multilingual pedagogy, a scarcity of translated resources, and policy documents that advocate inclusivity without providing practical implementation frameworks.

Conclusion

This research demonstrates that Zambia's leading digital learning platforms, despite their potential to expand access, currently reproduce deep-rooted linguistic and social inequalities. Through a Critical Discourse Analysis grounded in Fairclough's framework and Bourdieu's concept of linguistic capital, the study reveals that the hegemony of English in digital discourse is not a neutral technical choice but a power-laden practice that privileges urban, English-proficient learners. It marginalises those from indigenous-language backgrounds, thereby widening the educational equity gap.

The findings identify a clear disconnect between progressive policy rhetoric on inclusion and the monolingual reality of digital implementation. However, the study also uncovers a pathway forward. Evidence shows that inclusive language practices, such as code-switching, cultural contextualisation, and multilingual design, significantly enhance engagement, comprehension, and retention. These practices can transform platforms from sites of exclusion into linguistic bridges.

For digital education in Zambia to fulfil its transformative promise, linguistic inclusion must be moved from the periphery to the core of design, policy, and pedagogy. This requires deliberate, well-resourced, and systemic action. By integrating indigenous languages and culturally responsive pedagogies into the digital ecosystem, Zambia can build a more equitable educational landscape where technology empowers all learners, rather than amplifying historical inequalities.

Based on the findings, the following targeted recommendations are proposed to transform digital platforms from linguistic barriers into bridges for equity:

i. Develop a mandatory national framework for multilingual digital pedagogy: The Ministry of Education should establish and enforce clear technical standards requiring all government-approved digital learning platforms to provide:

   - Bilingual or multilingual interfaces: Navigation, menus, and instructions in at least the seven official Zambian languages.
   - Code-switched and audio-visual support: Core content (especially for literacy and numeracy) with integrated audio explanations, read-aloud features, and subtitles in local languages.
   - Cultural localisation guidelines: Mandates for contextualising examples, case studies, and imagery within familiar Zambian sociocultural environments.

ii. Invest in local-language digital content creation: The government, in partnership with NGOs and the private sector, should fund and establish regional digital content hubs. These hubs would train and empower teachers, translators, curriculum specialists, and community members to collaboratively produce high-quality, culturally-grounded learning materials in indigenous languages.

iii. Integrate multilingual digital pedagogy into teacher education: Pre-service and in-service teacher training programs must incorporate mandatory modules on:

   - Using digital platforms in multilingual settings.
   - Strategies for translanguaging and scaffolding content for learners with varying English proficiency.
   - Critically evaluating the cultural relevance of digital resources.

iv. Implement annual linguistic equity audits: The Ministry of Education should require and conduct regular audits of all public digital learning platforms. These audits would assess:

   - Progress on multilingual integration.
   - Accessibility for low-proficiency learners.
   - Cultural relevance of content.

- User experience feedback from diverse linguistic communities. Results should inform funding decisions, platform certification, and policy updates.

The application of the above recommendations and measures would help to mitigate the language barriers to promote equity in Zambia's digital education platforms.

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Conflict of Interest
The authors declare that there is no conflict of interest regarding the publication of the paper or otherwise.

Authors' contributions
The research was conducted by two scholars. The contributions of the authors are as follows:
Author PS: Conception/design, development of data collection instrument, analysis, interpretation of data, revised manuscript (30%)
Author RPAC: Conception/design, data collection, analysis, interpretation of data, editing and first draft (20%)
Author PS: Analysis and Interpretation of data (20%)
Author PS: Interpretation of data, first draft and revision (10%)
Author RPAC: Data collection, interpretation of data and first draft (10%)
Author RPAC: Interpretation of data, first draft and editing (10%)

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