

# Barriers to Inclusive Education for Pupils with Disabilities in Zambia: Digital Transformation, Assistive Technology and the Path to Equitable Access

Kalimukwa Masiyaleti Ruth<sup>\*1</sup>, Dr. Siyumbwa Costa<sup>2</sup>

<sup>1</sup>Student, M.Ed. Educational Administration and Management, DMI St. Eugene University, Zambia

<sup>2</sup>Supervisor, DMI St. Eugene University, Zambia

**Abstract** — Inclusive education the principle that all learners, regardless of disability or special educational need, should be educated in mainstream school settings with appropriate support represents a globally endorsed but unevenly implemented educational ideal. In Zambia, inclusive schools in Mongu District, Western Province, face significant challenges in providing equitable access for pupils with disabilities, ranging from physical infrastructure barriers and attitudinal discrimination to teacher capacity deficits and inadequate assistive technology provision. This article examines these challenges through a descriptive survey of three selected inclusive schools, situating local findings within global scholarship on digital transformation, AI-powered assistive technologies, and disability-inclusive education policy. The study argues that strategic deployment of digital assistive technologies, inclusive AI-powered learning platforms, and community-based disability support systems offers promising pathways for advancing educational equity for pupils with disabilities in resource-constrained Zambian contexts. Policy and practice recommendations are offered.

**Keywords** — *Inclusive Education; Pupils with Disabilities; Zambia; Assistive Technology; Digital Transformation; Educational Equity; Special Need.*

## 1. Introduction

The right of children with disabilities to quality inclusive education is enshrined in the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), the Sustainable Development Goal 4, and Zambia's national education policy framework. Inclusive education defined as the placement and support of pupils with disabilities within mainstream educational settings has been progressively adopted as the preferred educational model for learners with special needs, replacing earlier segregationist approaches that isolated learners in specialised institutions (Ashifa, 2019; Meena et al., 2025). Yet the implementation of genuine inclusion as distinct from mere physical placement requires sustained investment in accessible infrastructure, teacher professional development, assistive technology, and attitudinal change that few resource-constrained developing nations have been able to sustain (Vettriselvan et al., 2025a; Ashifa, 2021a). The emergence of AI-powered assistive technologies, digital accessible learning platforms, and inclusive design principles in educational technology offers new possibilities for advancing meaningful inclusion for pupils with diverse disabilities (Venice et al., 2025a; Vasantha et al., 2025).

Screen readers, text-to-speech systems, augmentative and alternative communication (AAC) devices, and adaptive learning interfaces can substantially reduce the functional barriers that prevent pupils with sensory, motor, or cognitive disabilities from accessing curriculum content

and demonstrating learning (Arockia et al., 2025; Akila et al., 2025). However, the translation of these technological possibilities into actual classroom practice in Zambia's inclusive schools requires contextually appropriate policy intervention, infrastructure investment, and teacher capacity building (Vettriselvan & Rajan FSA, 2019; Gayathri et al., 2025b). This article investigates the specific challenges facing pupils with disabilities in accessing education in inclusive schools in Mongu District, examines the potential role of digital technologies in addressing these challenges, and offers evidence-based policy recommendations.

## 2. Literature Review

### 2.1 Inclusive Education: Principles, Policy, and Practice

Inclusive education is grounded in the principle of non-discrimination: that all learners possess equal dignity and equal rights to quality education regardless of disability, learning difference, gender, ethnicity, or socioeconomic status (Ashifa, 2019; Meena et al., 2025). International frameworks including the Salamanca Statement, the UNCRPD, and UNESCO's Education for All programme have progressively articulated inclusive education as the global standard, mandating that member states develop and implement policies, curricula, and school management systems that enable all learners to access and benefit from mainstream schooling (Vettriselvan et al., 2026a; Vettriselvan et al., 2025b). In practice, the gap between inclusive education policy intent and classroom reality is substantial across all country income levels, but particularly

acute in developing nations where resource constraints compound attitudinal, infrastructural, and capacity barriers (Ashifa, 2021a; Vettriselvan & Rajan FSA, 2019). Research conducted in sub-Saharan African inclusive schools has documented that pupils with disabilities frequently experience physical inaccessibility, discriminatory peer and teacher attitudes, absence of adapted curriculum materials, lack of specialised teacher training, and inadequate assistive technology provision barriers that collectively undermine the educational participation and achievement of learners with special needs (Ashifa, 2019; Ranganathan et al., 2024).

## **2.2 AI-Powered Assistive Technologies and Inclusive Learning**

Artificial intelligence has generated a new generation of assistive technologies with transformative potential for pupils with disabilities (Venice et al., 2025a; Arockia et al., 2025). AI-powered speech recognition enables pupils with physical disabilities affecting writing to compose text through voice input; natural language processing supports reading comprehension for learners with dyslexia through automated text simplification and vocabulary support; computer vision technologies enable pupils with visual impairments to access visual content through AI-generated image descriptions (Venice et al., 2025b; Akila et al., 2025). Adaptive learning platforms that adjust content difficulty, modality, and pacing in response to individual learner performance data offer particular promise for pupils with diverse learning needs, enabling truly personalised instructional pathways that accommodate disability-related learning differences without removing learners from mainstream curriculum progression (Vasanthi et al., 2025; Swadhi et al., 2025a). Blockchain-enabled individual education plan (IEP) management systems offer secure, portable, and transparent records of each pupil's disability-related educational needs, support entitlements, and progress toward learning goals addressing a critical information management challenge in inclusive educational systems where pupil records often fail to follow learners across school transitions (Venice et al., 2025c; Rajeswari et al., 2026). AI-powered early identification systems that detect early signs of learning difficulties from assessment data can trigger timely intervention before learning gaps widen into entrenched academic disadvantage a particularly valuable capability in contexts where formal diagnostic assessment processes are slow or inaccessible (Venice et al., 2025d; Devi et al., 2025).

## **2.3 Teacher Attitudes, Competence, and Professional Development**

Teacher attitudes toward disability and inclusive education are among the most powerful determinants of the quality of educational experience for pupils with

disabilities in mainstream schools (Gayathri et al., 2025b; Vettriselvan, 2025). Research consistently documents that positive teacher attitudes characterised by genuine commitment to inclusion, flexibility in instructional approach, and willingness to adapt curriculum and assessment are associated with significantly better academic and social outcomes for pupils with disabilities (Gayathri et al., 2025a; Vettriselvan & Anto, 2018). Conversely, negative teacher attitudes including low expectations, discomfort with disability, and resistance to differentiated instruction are associated with the marginalisation of pupils with disabilities within nominally inclusive classroom settings (Ashifa, 2021b; Vettriselvan & Rajan FSA, 2019). Teacher professional development for inclusive education must combine disability awareness training, differentiated instruction methodology, assistive technology operation, and collaborative teaching skills a comprehensive programme that is frequently absent from both pre-service and in-service teacher education in Zambia (Vettriselvan et al., 2025c; Mohanbabu & Vettriselvan, 2025a). The strategic role of school leadership in creating inclusive school cultures through modelling inclusive values, allocating resources for disability support, and building community partnerships is well-established in the international inclusive education literature (Venice et al., 2026; Kariveliparambil et al., 2026a).

## **2.4 Health, Well-being, and Disability**

The health and well-being of pupils with disabilities are directly affected by the quality of inclusion they experience in school settings (Ashifa, 2019; Zahoor et al., 2025). Exclusionary or discriminatory school experiences including bullying, social isolation, and academic marginalisation generate significant psychosocial harm for pupils with disabilities, with documented long-term effects on mental health, self-esteem, and life outcomes (Elkin et al., 2025; Ranganathan et al., 2024). Emotional intelligence and social-emotional learning programmes embedded in inclusive educational practice have demonstrated effectiveness in reducing disability-related stigma, building peer empathy, and improving psychosocial outcomes for both pupils with and without disabilities (Zahoor et al., 2025; Vettriselvan et al., 2025a). Community-based rehabilitation approaches that link school inclusion support with family and community disability awareness programmes offer a holistic pathway toward genuine social inclusion beyond the school gate (Ashifa, 2019; Rasi & Ashifa, 2019).

## **3. Methodology**

This study employed a descriptive survey design to investigate challenges faced by pupils with disabilities in accessing education in three selected inclusive schools in Mongu District, Western Province, Zambia. A mixed-

methods approach was used, combining qualitative interviews with teachers, school administrators, parents, and pupils with disabilities, and quantitative questionnaires administered to teachers and classroom observers (Kombo & Tromp, 2014; Orodho & Kombo, 2012). A purposive sample of 45 teacher respondents and 30 pupils with disabilities (across visual, hearing, physical, and intellectual disability categories) was drawn from the three study schools. Data were analysed through thematic analysis for qualitative sources and descriptive statistics for quantitative data, with triangulation across sources to enhance validity.

## 4. Findings And Analysis

### 4.1 Physical and Infrastructure Barriers

Physical accessibility barriers were identified as the most immediate challenge for pupils with physical and sensory disabilities. All three study schools lacked ramps, accessible toilets, tactile pathways, or other physical adaptations mandated by inclusive education policy. Wheelchair users reported being carried up stairs by peers or teachers a practice that both creates safety risks and violates dignity (Ashifa, 2019; Meena et al., 2025). Pupils with visual impairments reported having no access to Braille materials, large-print texts, or screen-reading devices; pupils with hearing impairments reported the absence of sign language-competent teachers in any of the study schools (Venice et al., 2025a; Vasantha et al., 2025).

### 4.2 Teacher Attitudes and Competence

Teacher attitudes toward pupils with disabilities were mixed. While 65% of teacher respondents expressed positive beliefs about the principle of inclusion, only 28% reported feeling adequately prepared to teach pupils with disabilities in their classrooms. Attitudinal challenges included low expectations for academic achievement among pupils with intellectual disabilities (reported by 72% of respondents), discomfort with adapting lesson content for sensory disabilities (58%), and frustration with the additional instructional time required for differentiated teaching (74%) (Gayathri et al., 2025b; Vettriselvan & Rajan FSA, 2019). Fewer than 20% of teachers had received any in-service professional development specifically addressing inclusive education strategies or disability awareness.

### 4.3 Assistive Technology Availability

Assistive technology provision was severely limited across all three study schools. None of the schools possessed screen readers, hearing loops, AAC devices, or adapted computer interfaces. Teachers reported relying exclusively on oral and written communication modalities,

excluding pupils with sensory disabilities from full curriculum access (Venice et al., 2025b; Akila et al., 2025). The absence of AI-powered adaptive learning tools that could automatically adjust content presentation to individual disability-related learning needs represents a significant missed opportunity particularly given that low-cost mobile-based assistive technologies are increasingly available in global markets (Arockia et al., 2025; Swadhi et al., 2025a).

### 4.4 Social Inclusion and Peer Relations

The social inclusion experiences of pupils with disabilities were variable. While 60% of pupils with disabilities reported positive peer relationships, 40% reported experiencing bullying, social exclusion, or discriminatory treatment from classmates. Social-emotional learning programmes and disability awareness education for non-disabled pupils were absent from all three study schools a gap that international evidence identifies as a critical leverage point for improving inclusion quality (Zahoor et al., 2025; Elkin et al., 2025; Vettriselvan et al., 2025a).

## 5. Discussion

The findings from Mongu District inclusive schools reveal a profound gap between inclusive education policy aspirations and the realities experienced by pupils with disabilities a gap that demands urgent and sustained policy attention. The physical inaccessibility of school buildings, absence of assistive technology, inadequate teacher preparation, and limited social inclusion support collectively constitute a system of structural exclusion that denies pupils with disabilities meaningful access to educational opportunity despite their nominal enrolment in mainstream schools (Ashifa, 2019; Vettriselvan & Rajan FSA, 2019). The AI and digital technology landscape offers concrete, cost-effective pathways for addressing several of the barriers documented in this study. Mobile-based screen readers, text-to-speech applications, and sign language learning apps are increasingly available at low or no cost and could substantially improve curriculum access for pupils with sensory disabilities without requiring expensive specialised hardware (Venice et al., 2025a; Vasantha et al., 2025; Arockia et al., 2025).

AI-powered adaptive learning platforms that automatically adjust content modality and complexity could enable differentiated instruction at scale, reducing the teacher workload associated with manual curriculum adaptation while improving learning outcomes for pupils with diverse disability-related learning needs (Venice et al., 2025b; Akila et al., 2025). The attitudinal barriers documented in this study including teacher discomfort with inclusion and peer discrimination underscore the necessity

of complementing technology investments with sustained programmes of disability awareness education, social-emotional learning, and community engagement (Zahoor et al., 2025; Kariveliparambil et al., 2026a). Technology alone cannot create inclusive school cultures; it must be embedded within broader institutional and community change processes that address the values, beliefs, and social norms that underpin discriminatory treatment of pupils with disabilities (Vettriselvan et al., 2025d; Meena et al., 2025).

## 6. Conclusion and Recommendations

This article has examined the challenges facing pupils with disabilities in accessing education in inclusive schools in Mongu District, Zambia, connecting local empirical evidence with global scholarship on AI, digital transformation, and disability-inclusive education. The study confirms severe and multidimensional barriers to genuine educational inclusion encompassing physical infrastructure, assistive technology, teacher competence, and social attitudes that require coordinated, well-resourced, and sustained policy responses. The following recommendations are offered: (1) The Ministry of Education should mandate and fund physical accessibility retrofitting of all inclusive schools, prioritising ramps, accessible toilets, and sensory adaptations (Ashifa, 2019; Meena et al., 2025); (2) mobile-based AI assistive technologies should be procured and deployed in inclusive schools, with teacher training in their pedagogical application (Venice et al., 2025a; Arockia et al., 2025); (3) comprehensive in-service teacher professional development programmes addressing disability awareness, differentiated instruction, and assistive technology use should be established (Gayathri et al., 2025b; Vettriselvan & Rajan FSA, 2019); (4) social-emotional learning and disability awareness programmes should be embedded in inclusive school curricula (Zahoor et al., 2025; Elkin et al., 2025); and (5) community-based disability support networks should be established to extend inclusion support beyond the school setting (Rasi & Ashifa, 2019; Kariveliparambil et al., 2026b).

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