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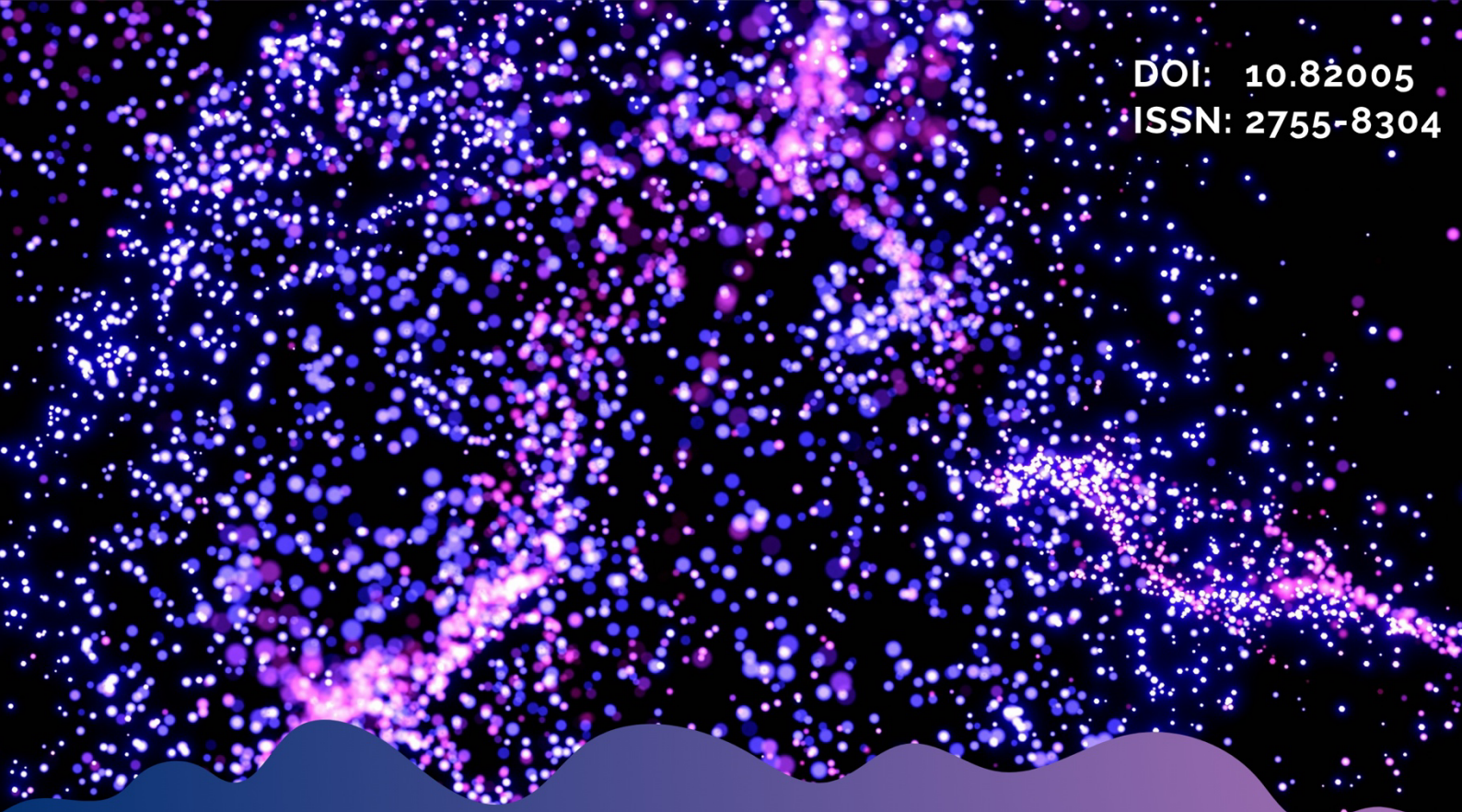

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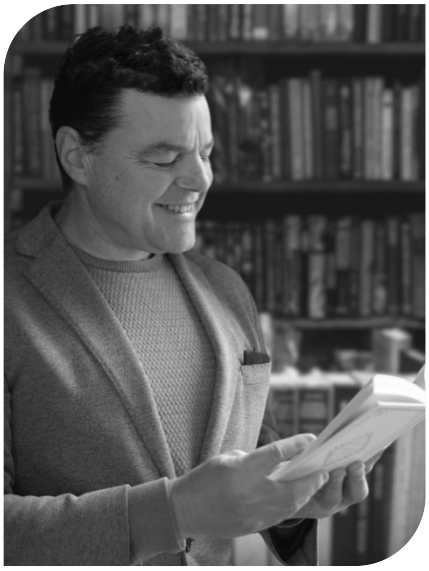

FROM THE EDITOR

Dr Martin Bloomfield
Editor-in-Chief NeuroConverse®

Culture, Context, and Neurodiversity

This edition of NeuroConverse asks us to consider a deceptively simple, and yet globally inescapable, question: the intercultural nature of neurodiversity. Can neurodiversity ever be understood apart from culture? While neurodivergence is often discussed as a matter of cognition, diagnosis, legal status, social positioning, or educational practice, the contributions in this issue remind us that every neurodivergent experience is lived within communities, languages, traditions, institutions, tensions, and relationships. Neurodiversity does not exist in a vacuum: it is always cultural.

We begin with Dr Helen Ross's reflective opinion piece, Reflections on a Churchill Fellowship: Perspectives on the (Lack of) Choices We Afford Our Children and Young People. Drawing on insights gathered through international research and dialogue, Ross introduces the theme of understanding across borders and contemplates how different educational systems approach literacy, assistive technology, and learner support. Her reflections return repeatedly to the importance of agency and choice, reminding us that meaningful inclusion requires more than just providing support; it requires listening carefully to the diverse ways in which young people themselves wish to learn, participate, and flourish, wherever they come from.

Then we encounter Learning With One Another: Storytelling, Community, and the Co-Creation of Neuroaffirming Educational Practice, a thoughtful and innovative exploration of narrative as both method and pedagogy. Drawing together educators from Australia and the United Kingdom, the authors argue that storytelling can transcend geographical and institutional boundaries, creating spaces where lived experience becomes a legitimate source of knowledge. Their work challenges conventional professional development models that privilege expertise over experience (and, consequently, privilege “the elite” and often economically more wealthy over those whose lives are impacted and who do not have the advantages of wealth and social status), instead proposing a form of intercultural dialogue grounded in reciprocity, vulnerability, and shared meaning-making. The stories presented are not merely accounts of neurodivergence; they are encounters across differences of discipline, geography, and personal history. Through narrative, the authors open a discursive space and show how understanding emerges not from instruction alone, but from relationship.

The conversation then expands considerably in AI and Inclusive Education in the African Context: Navigating Digital Divide Gaps, Building Equitable Futures. Here, the focus broadens from interpersonal encounters to global systems, asking how emerging technologies can support neurodivergent and disabled learners in contexts too often overlooked by dominant educational narratives. The authors offer a powerful challenge to the narrative that technological innovation is inherently inclusive. Instead, they demonstrate how AI systems frequently carry the cultural, linguistic, and economic assumptions (as well as the aims and purposes) of their creators, often reflecting priorities rooted in the Global North. The result is a sobering reminder that accessibility without cultural awareness is only partial inclusion. Whether considering local languages, community knowledge, disability stigma, or infrastructural realities, the paper argues persuasively that equitable education requires solutions designed, not alongside but within, communities. We should get away from the comfort of "knowing what is good for people, and imposing it upon them".

Taken together, these contributions show that neurodiversity and neurodifference cannot be separated from cultural context. They show how understanding grows through stories shared across borders, how educational technologies must be shaped by the communities they serve, and how international exchange can challenge assumptions about support, participation, and choice. All three challenge universalising and monolithic approaches that assume one model of inclusion can fit all contexts. Instead, they advocate for approaches that are relational, participatory, and culturally responsive.

Running through these contributions is a common commitment to epistemic humility: the recognition – especially in a time when both the UK (through an academic study associated with SASC, the SpLD Assessment Standards Committee) and the US-based International Dyslexia Association have updated their own definitions of dyslexia to fit their own groups' aims and purposes – that no single institution, discipline, culture, or technology possesses a monopoly on knowledge. Whether through the exchange of stories between educators, the development of locally grounded AI systems, or international reflection on educational practice, inclusion emerges when diverse voices are not merely accommodated, but actively enabled and empowered to shape the conversation itself.

In this sense, the theme of this issue is not simply neurodiversity, but neurodiversity both in and as dialogue: dialogue between individuals, between cultures, between communities, between histories, between local and global perspectives, and between different ways of knowing – indeed, potentially, different forms of rationality. It reminds us that the future of neuroaffirming practice depends not only on understanding difference, but on understanding the cultural worlds in which difference is understood, positioned, and lived.

Martin Bloomfield

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Reflections on a Churchill Fellowship: Perspectives on the (lack of) choices we afford our children and young people

Helen Ross
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The thinking-ground created by my recent Churchill Fellowship travellings has been a real privilege. Indeed, within the busyness and complexity of modern life, it is not often that that I can pause and reflect on the challenges the current English education system poses to young people, with equal capacity for space and time to explore ways to address those challenges. My Churchill Fellowship has provided me with the practical means to enable me to do just that (Churchill Fellowship, 2025). Ostensibly, I was exploring how to best support young women as they move between school and university or the workplace. However, as with many research projects, other, unexpected questions and factors to consider enter the research space.

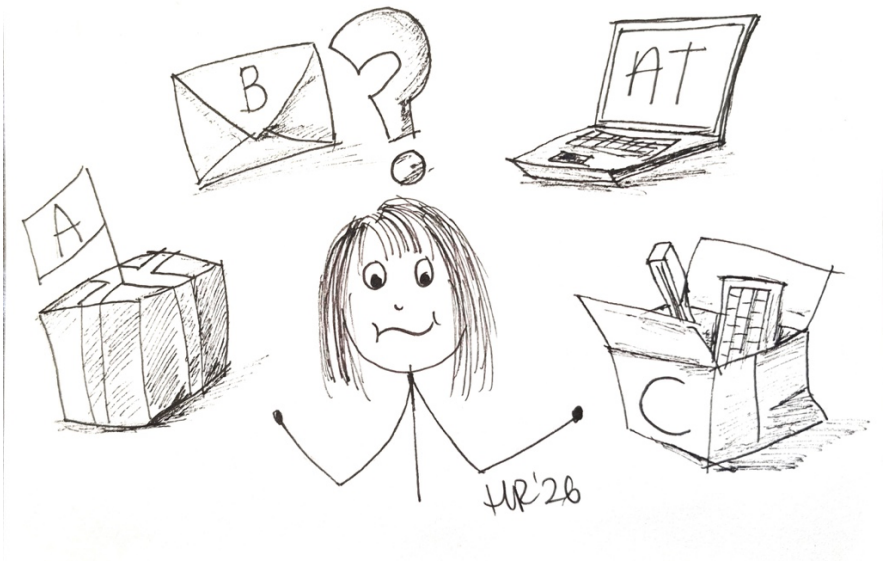
Exploring how young people can be supported in developing their literacy skills almost invariable draws assistive technology (AT) into discussion. Alongside wider awareness of disability within the workplace (particularly from managers and team leaders), and flexibility in working practice, the availability of AT to employees is noted as a key factor which enables them to access the workplace, in order to contribute meaningfully to it (Koldas *et al.*, 2025). There is clearly a need, then, for young people to engage with assistive technology so that the workplace is accessible for them. In schools, the importance of access to assistive technology is also noted as important to facilitate access to the curriculum for young people with special educational needs and/or disabilities (SEND) (Dhouib *et al.*, 2025). However, others argue that AT is not a panacea for supporting young people (Fernández-Batanero *et al.*, 2022; Mukhtarkyzy *et al.*, 2025). High quality teaching is implicated in meeting need and supporting young people to thrive and progress academically.

However, literacy instruction seems to be an area ruled by dogma as much as robust evidence. When exploring *how* educators determine which interventions or support strategies to use, I had suspected that they did not necessarily use robust, evidence-based interventions. Educators have a plethora of resources available for their use and they do tend to stick to what they know, even where young people are not making progress as expected. Government funding is tied to approved schemes of work for literacy instruction (DfE, 2026), which means that schools are likely to be wary of investing in other programmes, instead choosing ready-baked programmes from that list.

But there are young people who need something different.For some young people and practitioners I spoke to in my fieldwork, access to assistive technology was vital to helping them to express themselves, work independently and gain confidence. Whereas for others, addressing the underlying vulnerabilities in cognitive processing and subsequent literacy difficulties was the cornerstone of any provision. At this point, I am wholly of the view that AT and literacy intervention strategies can, and probably should coexist. Choice is a key factor which needs to be considered; meaningful participation and agency in decision-making processes is vital for young people's wellbeing to help empower them and foster their ownership of their own learning (Ross, Malone and Wood, 2025).

However 'choice' seems to be missing from the equation of current English education policy discourse. Indeed, current consultations linked to provision in schools for young people with SEND assert that pre-defined packages for young people will meet their needs (DfE, 2026a). This is at odds with much research, including my own findings and suggests that substantial effort and work is needed to raise awareness with the educational establishment of how to best support young people, including via the enacting of their own agency.

My views on this aren't finished, formed and polished yet, by any means but there is certainly a starting point for more research and exploration.



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Learning With One Another: Storytelling, Community, and the Co-Creation of Neuroaffirming Educational Practice

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Abstract

This paper examines narrative and storytelling as mechanisms for supporting neuroaffirming educational practice in higher education. As a group of teachers and academic developers working across disciplines in universities in Australia and the UK, we observe that professional development in inclusive teaching does not adequately centre lived experience as a form of knowledge. Staff training often focuses on definitional understandings of disability and surface-level recommendations for inclusive practice, with limited space for the complexity and relational dimensions of neurodivergent experience. While many educators carry powerful stories shaped by neurodivergence, there are few structured opportunities within institutional contexts to articulate, share and collectively interpret these narratives.

Our project explored whether creative and reflective writing could provide a shared language for our knowledge and experiences, and whether storytelling might function as a mode of neuroaffirming practice in its own right. During Academic Writing Month (#AcWriMo), we came together as part of an international 'creative pedagogies' project to write and exchange stories of neuroaffirming teaching and learning. Initially, as strangers across geographic and institutional boundaries, we found camaraderie in shared experience. The paper centres four of these narratives, presenting selected extracts alongside engagement with literature on neuroaffirming pedagogy, expressive writing and communities of practice.

We argue that storytelling and freeform writing enable reflective meaning-making that extends beyond conventional professional development models. Writing stories of practice, struggle and growth created space for participants to surface tacit knowledge, interrogate assumptions and reframe experiences that might otherwise remain individualised. In sharing these narratives, participants contributed to a collective archive of experience that educates and empowers. The stories operate not

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as illustrative anecdotes appended to theory, but as sites of knowledge production that complicate and enrich dominant discourses of inclusion.

In this context, storytelling functions simultaneously as pedagogy and community-building practice. The act of writing and reading each other's stories fostered relational connections across institutions and national borders, enabling educators to learn with one another rather than merely from one another. This shift from transmission of best practice to co-construction of meaning models a neuroaffirming approach grounded in reciprocity, compassion and attentiveness to difference.

Our unorthodox methodology borrows from the Dadaists sense play. Writing as separately authored pieces, we create a tapestry of voices woven together by a theoretical thread. A practice-based collaborative autoethnography using poetic inquiry to explore academic and neurodivergent lived experience.

By focusing on narrative as both method and outcome, this paper demonstrates how story-based practices can cultivate accessible communities of practice. We suggest that embedding creative, reflective storytelling within academic development initiatives offers a pathway for advancing neuroaffirming education across disciplines, institutions and geographic contexts.

Keywords: neuroaffirming, narrative, interdisciplinary, academic development, community building

1. Introduction

Neurodiversity is commonly defined as the natural variation in human cognition rather than a deficit, challenging traditional medicalised understandings of neurological difference (Singer, 1999). This perspective aligns closely with the social model of disability, which shifts the focus from individual "impairment" to the societal structures that produce exclusion and disadvantage (Azuka et al., 2024). Within this framework, neurodivergence refers to individuals whose cognitive styles diverge from dominant norms, including, but not limited to, autism, attention-deficit/hyperactivity disorder (ADHD), dyslexia and related conditions. Rather than positioning these differences as deficits to be corrected, the neurodiversity paradigm recognises them as part of the natural spectrum of human variation.

Building on this foundation, neuroaffirming (or neurodiversity-affirming) approaches emphasise strengths, autonomy, and identity, moving away from remediation-focused practices. Such approaches aim to work with, rather than against, an individual's neurotype, placing value on diverse ways of communicating, processing, and making meaning (Cohn & Harrison, 2025). In educational settings, neuroaffirming approaches seek to validate diverse ways of thinking, learning, and communicating, recognising behaviours often labelled as atypical as meaningful forms of expression rather than symptoms requiring correction. This reframing opens space for alternative modes of engagement and knowledge construction that better reflect the experiences of neurodivergent individuals.

Storytelling plays a central role in this process. In neurodiversity contexts, storytelling has been shown to support non-normative communication styles, facilitate peer connection, and foster shared understanding (Xiao, 2024). Storytelling resists normative academic discourse and creative writing legitimises alternative epistemologies. Narrative and creative writing approaches have been widely used in research with populations for whom experiences may be difficult to articulate through conventional and linear methods. For example, work with refugee and displaced communities demonstrates how storytelling and narrative inquiry enable expression of complex and often fragmented experiences (Saltsman and Majidi, 2021; Rieger et al., 2023).

Contemporary work on neurodivergent experiences has increasingly adopted a neuroaffirming perspective, emphasising strengths, identity, and lived experience. However, much of this work remains grounded in epistemological traditions that privilege analytical, individualised, and often deficit-oriented ways of knowing. Emerging research suggests that alternative approaches to meaning making, particularly those rooted in narrative and storytelling, offer a powerful way to resume how individuals connect, communicate and construct knowledge. While this may appear as a novel methodological turn within contemporary research, storytelling as a means of understanding human experience is far from new; rather, it reflects longstanding practices embedded within knowledge systems, where meaning is co-constructed, relational, and grounded in lived experience (Colla & Kurtz, 2024).

Storytelling shifts the focus from knowledge as something transmitted to knowledge as something relationally produced, allowing individuals to engage with multiple perspectives and shared meanings. . This distinction highlights the importance of what has been described as an "ethical space," where different epistemologies can meet, allowing for dialogue that is grounded in mutual respect, empathy, and co-construction of meaning (Colla & Kurtz, 2024). Such a perspective is particularly relevant in the context of neurodivergence, where dominant modes of communication and knowledge production may marginalise or exclude alternative ways of expressing and understanding experience.

Within educational contexts, narrative-based approaches have gained increasing attention as a means of facilitating meaning-making and connection. Narrative pedagogy, for example, positions learning as a collaborative process in which educators and students engage in reflection and interpretation of shared experiences (Brady & Asselin, 2016). Evidence suggests that narrative pedagogy can promote empowerment, interconnectedness, and the development of meaning as a central component of learning, shifting education away from passive knowledge acquisition toward active, reflective participation (Brady & Asselin, 2016). More recent work further emphasises storytelling as a mechanism through which learners articulate identity, negotiate personal and cultural experiences, and connect individual perspectives with broader social realities (Martins et al., 2025).

Creative and reflective writing practices provide a particularly rich medium for this form of meaning-making. Writing for personal and professional development has been shown to enable individuals to explore complex or inaccessible experiences, including those that may be difficult to articulate through conventional academic discourse (Lengelle et al., 2014). Reflective writing allows individuals to step outside immediate experience and consider alternative viewpoints, while reflexive writing extends this process by inviting the exploration and embodiment of multiple selves and perspectives. In this sense, writing becomes not merely a tool for communication but a space for experimentation, identity work, and transformation (Lengelle et al., 2014). Similarly, poetic and narrative forms of writing have been shown to support meaningful literacy and identity expression, particularly in contexts where language, culture, and personal experience intersect (Iida, 2016).

Narrative structures support the generation of new ideas, actions, and strategies, suggesting that storytelling plays a fundamental role in human creativity and adaptation (Fletcher et al., 2023). In educational contexts, this aligns with research highlighting the role of narrative creativity and written expression in fostering cultural understanding, empathy, and respect for diverse perspectives (Portnova et al., 2020). Through storytelling, individuals are able to connect personal experiences with shared human values, creating spaces for dialogue that extend beyond linguistic and cultural boundaries.

At a time when many voices risk being marginalised or lost within dominant academic discourses, narrative approaches provide a means of reclaiming and amplifying diverse experiences. In this piece of work, neurodivergent individuals are active contributors to knowledge, not subjects of a study. By

emphasising relational, embodied, and co-constructed forms of knowledge, storytelling has the potential to reshape how educators—and, increasingly, students through student–staff partnerships—engage with meaning-making processes.

2. Methodology

Writing Apart, Together: The AcWriMo Project

In November 2025, we came together as part of *Academic Writing Month (*#AcWrMo*)*, an international initiative that emerged and flourished during the height of Twitter's academic communities. The premise is simple but powerful: to carve out dedicated time for writing within a supportive, collective structure. Our contribution sat within the broader *Creative Pedagogies* consortium, an evolving international network of educators (spanning the UK, the US and, increasingly, other global contexts) who share an interest in reimagining teaching and learning through creative practices and methods (see Appendix 1).

Within this consortium, participating institutions propose projects that invite colleagues into shared writing experiences. These projects vary in form: some offer daily prompts to spark individual writing, while others take a more collaborative, exploratory approach, such as capturing and reflecting on classroom experiences. Our project invited participants into a four-week, structured process of story writing, centred on the theme of neuroaffirming practice.

The project emerged from an authentic,practical and pedagogical challenge: how to design professional learning that meaningfully engages educators with neurodiversity and inclusive teaching. Rather than relying solely on definitional or compliance-based approaches to learn about neurodiversity, this initiative sought to centre lived experience. Specifically, it invited educators to reflect on their own encounters with neurodiverse students and colleagues, and to render these experiences as stories. For this project, five educators and academics from the UK and Australia expressed interest in participating, of which four were happy to share their stories; extracts from these are shared in the Findings section. In doing so, the project positioned storytelling not only as a reflective tool, but as a potential resource for future professional learning; one capable of fostering empathy, critical reflection, and a shared community of inquiry.

The structure of the project mirrored a classic three-act narrative arc (Field, 1979), coordinated across four weeks. Participants who registered for the programme received a weekly email introducing each stage of the process and guiding their writing:

> Week One, *the set-up*, focused on establishing the narrative world. Participants were prompted to consider characterisation: who is present in the story, and how do they identify (as neurodiverse or neurotypical)? What is the setting, and who is telling the story? Importantly, this stage encouraged writers to attend closely to behaviours, emotions, and underlying assumptions, laying the groundwork for reflective depth.
>
> Week Two, *the confrontation*, introduced narrative tension. Participants were asked to identify an inciting incident or catalyst: an event that disrupts the status quo and presents a challenge or moment of change. This need not be dramatic in a conventional sense; participants were equally encouraged to explore moments of surprise, discomfort, or even joy that reveal something significant about teaching and learning relationships.
>
> Week Three, *the resolution*, turned toward meaning-making. Here, participants were invited to articulate what had shifted: What was learned? How had perspectives or practices changed? What insights or advice might be offered to others? This stage foregrounded the connection between narrative and professional growth, positioning reflection as both personal and pedagogical.

> Finally, Week Four focused on *presentation*. In keeping with the ethos of the Creative Pedagogies consortium, participants were encouraged to consider how their stories might be communicated in creative and engaging ways. This extended beyond traditional academic prose, opening possibilities for multimodal expression and challenging conventional assumptions about what constitutes "academic writing."

Central to the project was the principle of writing in community. Participants were invited not only to write individually, but to share, respond, and develop ideas collectively. A digital platform (Padlet, see Appendix 2) was used throughout the month to facilitate this exchange, resulting in a rich and varied collection of story fragments, reflections, and emerging narratives. The process underscored the generative potential of communal writing practices, where ideas are not only expressed but shaped through interaction with others. The participants' willingness to share openly created the conditions for others to take creative risks they may not have taken alone.

At the conclusion of the month, we found ourselves with a compelling archive of story ideas and a shared sense of the project's value. This prompted a new set of questions: What might these stories become? How might the collection grow, perhaps to include students, or interdisciplinary teams? How could it be mobilised as a resource for teaching and learning?

This article represents our first step in responding to these questions. It captures the project in its catalyst phase, offering an account of its design, intentions, and early outcomes, while also gesturing toward its potential as an ongoing, collaborative endeavour.

Methodological Approach: Collaborative Autoethnography and Poetic Inquiry

The project adapted a collaborative autoethnographic approach, combining individually authored reflections into a shared, dialogical inquiry (see Appendix 3). The authors of this article are the participants of this collaborative. Collaborative autoethnography enables researchers to draw on personal experience while engaging in collective meaning-making, situating the self within broader cultural, social, and institutional contexts (Chang et al., 2013; Adams et al., 2015). In this work, each contribution is written independently, yet brought together to form a layered, multi-voiced narrative that reflects both convergence and tension across perspectives regarding their experience of neurodiverse education. This approach aligns with person-centred and participatory traditions, emphasising lived experience as a legitimate and valuable source of knowledge.

Alongside this, the study incorporates poetic inquiry as a means of extending beyond conventional academic discourse. Creative writing allows for ambiguity, emotion, and non-linear expression, capturing aspects of experience that may resist standard analytical representation (Prendergast, 2009; Faulkner, 2020). The methodology embraces a degree of Dadaist playfulness—disrupting coherence, resisting rigid structure, and valuing fragmentation as a productive space for meaning-making. Rather than seeking a singular, unified account, the juxtaposition of creative and reflective pieces invites readers into an open, interpretive process, where knowledge emerges through resonance, contrast, and relational engagement.

3. Results / Main Findings

Our Stories of Neuroaffirming Teaching and Learning

In this section, four individual narratives are explored (see Appendix 3 for full narratives) Each piece was independently authored, reflecting the distinct voice, experience, and perspective of each contributor. We have chosen some specific extracts from these narratives for the purposes of reflection and discussion. Alongside these narratives, brief reflective commentaries are included, offering insight into the authors' writing processes, intentions, and interpretations. Figure 1 provides a visual representation of how participant contributions unfolded across the month, capturing the collaborative writing space from which the narratives in this section emerged.

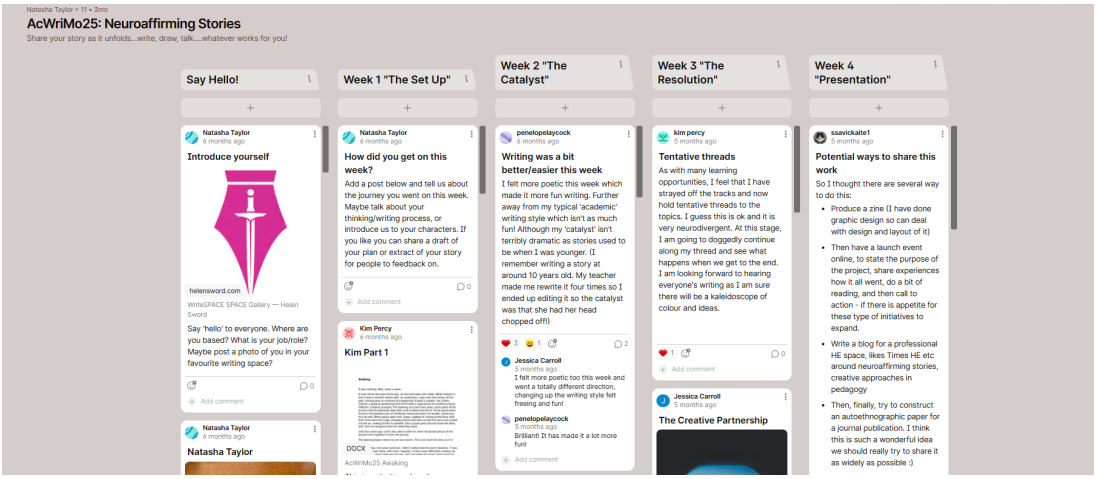

Figure 1. Participant contributions to the AcWriMo shared writing space (Padlet)

Narrative 1 - A dialogue between oneself

The narrative is structured as a dialogue between two voices - "me" and "you" - which together reflect the multiplicity of self and the ongoing negotiation of identity. This dialogic structure allows for the exploration of uncertainty, contradiction and self-questioning. For example, the opening exchange immediately situates the reader within a space of ambiguity and inquiry: *"Me: Who am I speaking to right now?"* followed by the response, *"You: I'm not sure you fully know who I am. Still, you try."* This interaction highlights a central tension within the narrative - the difficulty of fully knowing oneself and the simultaneous drive to understand.

Throughout this extract there are recurring oscillations between connection and withdrawal - a theme that reflects broader human experiences of belonging and difference. The narrator reflects: *"I want to think I don't want to belong at the core. As if I am another species, not human."* This statement illustrates the tension between a desire for autonomy and an awareness of the fundamentally social nature of human existence. The counterpoint is introduced through the dialogic voice, which challenges this position and reframes it as part of a shared human condition.

The narrative does not resolve these tensions but instead dwells within them, allowing space for complexity and contradiction. This is particularly evident in the exploration of internal worlds as both sanctuary and risk: *"I think it's a sanctuary. When I'm alone, I feel calm... well, until I start thinking of other people."* Here, solitude is position as both restorative and destabilising, reflecting the layered nature of internal experience. The imager of the *"field of tall grass on a steep cliff"* further exemplifies how sensory and embodied descriptions can communicate experiences that may be difficult to articulate through conventional academic language.

This story also engages explicitly with themes of identity and difference, including reference to neurodivergence as an ongoing and pervasive aspect of experience: *"It's not 'again.' It's always. It's the filter, the volume knob, the way my neurons hum when others rest."* This framing shifts neurodivergence from a situational label to a fundamental mode of being. At the same time, the narrative resists reductive categorization by situating these experiences within broader existential concerns, such as the desire to be understood: *"I want to be understood. There's a difference."*

A further theme emerging from this narrative is the notion of visibility and recognition. The narrator reflects on relational experiences through the metaphor of being a *"floater"*, someone present but not prioritised: *"I was always the keen friend... But no one ever did that for me. I was always forgotten."* This articulation captures a nuanced experience of partial belonging, where individuals are included but not fully seen. Such experiences are not limited to any single population and may resonate across different contexts, including educational environments.

This story demonstrates how creative writing can function as a space for exploring internal dialogue, identity and relation positioning. Individual experiences are presented as fluid, fragmented and multi-voices and this enables a form of meaning making that is personal and broadly relatable.

Narrative 2 - Learning from neurodivergent people

Many educator careers are shaped by the neurodivergent people in their lives - in both their industries and in teaching and learning spaces. The shaping is often quiet and cumulative, many educators carry stories that are powerful, formative, relational and the AcWriMo project offered me a structured occasion to surface them.

My narrative starts with three concepts - an early classroom encounter, a professional creative partnership and a student who couldn't submit their work. Each one carried a version of the same question: what has the narrator learned from the neurodivergent people in their life? The narrator has observed their peers' sharing stories and, as they modelled vulnerability, it shaped the direction of their thinking. The asynchronous structure of the month-long project meant the narrator could sit with their work, return to it and reorient themselves. Something shifted as the narrator began to experiment with expressive writing and the group's stories became a lens through which they could see their own narrative differently.

Nørgård et al (2017) argue that playful approaches in higher education open space for reflective risk-taking, experimentation, play and learning through making. My story surfaced - through open prompts and exploration without predetermined outcome - as a poem. This kind of poetic inquiry created conditions for a different kind of engagement with the experience, one that moved toward meaning.

Fitting as I write, wind underneath.

Steel bird in the sky.

People were drawn to your unique creative energy and focus.

Your drive. Your unquenchable thirst to create. To express.

Your meticulous organisation and focus.

Until it was perfect. It stayed in the cloud.

I learned to wait. Be patient.

Let the process unfold.

Let you envisage and create.

You taught me a new side of creativity.

You pushed me forward.

Poetic inquiry as a method condenses experience, attends to the connotative and ambiguous and creates the conditions for a different kind of knowing to emerge. This quality of attentiveness to what is not yet named is also at the heart of neuroaffirming practice. Both require a willingness to sit with complexity rather than resolve it and to stay with experience rather than extract a lesson from it. The poem surfaced tacit knowledge about what it means to learn with a neurodivergent collaborator. What the poem did that my usual reflective writing did not was hold the relationship rather than describe it. By saying less, I found I could stay closer to what was true.

Shulman (2005) identifies habits of heart as central to professional practice in fields that are fundamentally relational, what the poem surfaced was how much of that knowledge had come to me from the neurodivergent people I had worked alongside. It gave me language for a form of relational, reciprocal learning that sits outside conventional professional development. Neuroaffirming practices embody empathy, recognition of difference and a willingness to be changed. Professional development that aims to cultivate those habits must itself create conditions for play, vulnerability, sense-making and creative risk.

Narrative 3 - Neuroaffirming teaching practices

Collaborative autoethnographic storytelling revealed an awareness of how neuroaffirming teaching practices are of value in higher education. By drawing on personal narrative to connect and enrich an understanding of teaching neurodivergent students, the narrator unearthed communal experiences of challenges and strengths through a language of visual representations. This abridged piece of writing reflects the narrator's neurodivergence awakening through their pedagogical approach.

It was morning. Well, really a dawn.

It may not be the start of the day, as time is not relevant. What matters is that it was a moment where light, an awareness, crept over the horizon of the past, shining onto a beginning. It wasn't sudden, not a flash, instead, a gradual awakening of neurodivergence that illuminated a cognizance of something being different. The dawning occurred over years, each piece of the puzzle carefully gathered, kept safe. Some pieces were found in the jewellery box of childhood, treasured tokens of wonder, glistening, tiny to hold. Other pieces were cold, sharp, capable of cutting to the bone. There were the huge, shadowy pieces that took up half the room and sucked out the air, making it hard to breathe. Each puzzle piece did not know the other, and I did not recognise them for what they were.

This is the start of my story, and it is probably the start of many people's story. As an artist I draw on a language that communicates with visual stories. It is a language of symbols and metaphors, of colour and line, of light and dark. Visual language speaks heart to heart, mind to mind, by passing the defiance of words.

By the time I was in my thirties, I had survived the Y2K bug and discovered the freedom of country-life in a wee cottage climbing with roses. I still didn't know why I found spelling hard, why I missed details in emails, why instructions were like a foreign language or why seemingly easy tasks were like scaling a mountain. But I began to find ways to make things easier and found strategies to succeed. I built a ladder to climb out of the well with tools to forge different decisions. I discovered that I was something more than deficit.

I am now a teacher, an educator, a guide and a mentor. When I first started teaching, I had very little idea of what I was doing. My beginning was a baptism of fire. I had no guidance, or mentorship yet I met the classroom with ideas and experimented with techniques. Some worked, some failed.

When I began teaching art and design, my neurodivergent puzzle pieces were still nebulous, floating around in the corners of my mind. By this stage, I had compartmentalised them into manageable quirks and meaningful curios. Meeting a range of art students, I recognised a familiarity with my experiences, the way I thought and how they worked.

I use empathy as the starting block for teaching. Finding ways to connect to each student is a genuine joy and a privilege. As my knowledge of dyslexia and other neurodivergence grew, the challenges, the successes and the rationales my students approached their studies made sense.

My students are a collection of puzzle pieces within my story. But instead of hiding away in the shadows, I hold these pieces to the light, to be admired, cherished and learnt from. My students are pieces of me, echoing my dawn of awareness, and each carry with them a reflection of who I am as a neurodivergent and as a teacher. There isn't one student who has been the catalyst for change, instead each relationship has added colour to my puzzle. As my neurodivergence has gained depth and filled

the crevices of my understanding, my capacity to connect and understand the challenges and successes of each of my students has become brighter, sharper and more in focus.

Writing this reflection has revealed the impact neurodivergence has upon teaching and how narrator connect with my students. Narrator's PhD research informed that there is a higher than average prevalence of neurodivergent students in art and design, especially dyslexics (Percy, 2025; Steffart, 2009; Wolff & Lundberg, 2002). For this reason, being dyslexic has enabled the narrator to empathise with students, and they have developed methods to strengthen positive neurodivergent attributes in the university classroom such as problem solving, visual spatial awareness and multidimensional thinking (Hewlett, 2018). Connecting with other pedological voices through this writing project has sparked mindfulness across disciplines and bridged geographical spheres.

Narrative 4 - Neuroaffirming supervision and support

My narrative is based on my supervisory experience teaching Social Policy at the University of Glasgow.

The narrative begins by foregrounding the role of space in shaping teaching and learning. It opens with the observation that "*it is often hard to find a sense of calm in a university setting. Offices are old and tired; chairs don't quite align with desks; windows let in more cold than light*." This situates supervision within environments that are not designed for reflection or relational engagement. In contrast, the story introduces an alternative pedagogical space. "*In the physical academic world of Bute Gardens, however, a different kind of space exists*." This room is described as "*larger, less rigid than the standard academic office*," created with the intention of being "*part office, part meeting room, but also something more, a space that feels welcoming to anyone who enters*." The emphasis shifts toward relational design through the description "*A space that holds people rather than directs them*." Such attention to the environment reflects inclusive approaches that anticipate variation in how students engage with learning.

Within this space, the supervisory relationship unfolds. Over time, "*the room becomes a physical manifestation of a safe space, somewhere I can observe and guide, but also somewhere the student can think aloud, pause, and return to ideas without pressure*." This reflects trauma-informed pedagogical approaches, where safety and transparency support engagement (Carello and Butler, 2015). It also reinforces a key point: inclusive teaching does not require students to identify or disclose themselves as neurodivergent but instead involves designing learning conditions that support a range of needs.

Rather than attributing difficulty to the student, the narrative reframes it as a pedagogical issue. I begin "*recalibrating. Slowing down. Asking different questions*," shifting toward a more dialogic approach. The interaction becomes collaborative. "*What if we start here, what stands out to you in this quote? What makes it similar to another? What would happen if we grouped these together?*' Hypothetically, "*I sketch the socioecological model on paper, mapping their data onto its layers, as a shared exercise*." What emerges is not deficit but need. "*Not a lack of ability, but a need for clarity and guidance that is explicit rather than assumed*." The student "*requires structured support as a way into the complexity of the task*." This aligns with inclusive pedagogical approaches that emphasise clarity and scaffolding as beneficial to all learners (Florian and Black-Hawkins, 2011). From a neuroaffirming perspective, such structure supports access without requiring disclosure.

The narrative foregrounds the relational tensions inherent in supervision. "*Academic rigour and compassion*." I reflect, "*I do not want to over-direct, but nor do I want to leave the student navigating ambiguity alone*." Gradually, "*the student begins to articulate connections, tentatively at first, then with more confidence*," and "*what had seemed like a barrier becomes, slowly, a point of entry*." This highlights learning as a process shaped through time and compassion.

4. Discussion / Implications

What Stories Do: Reflection, Meaning-Making and Tacit Knowledge

Throughout this project, storytelling functioned as more than a mode of expression; it became a method for surfacing assumptions, making meaning, and accessing forms of tacit knowledge that often remain unarticulated in conventional academic discourse. Through the act of playful writing, participants were prompted to revisit familiar experiences with renewed attention examining not only what happened, but how it was interpreted, felt, and understood in retrospect. In this sense, stories created a space for reflective practice that is both critical and generative, enabling educators to notice the implicit beliefs and practices that shape their work. Storytelling, therefore, offers a way of working with complexity, holding ambiguity, contradiction, and emotion alongside analysis while also making such knowledge visible and shareable within a scholarly community.

Storytelling as Community Practice

While the reflective dimension of storytelling is significant, this project also highlighted its relational potential. The process of writing and sharing narratives during AcWriMo fostered the development of a relational, cross-institutional community of practice. Through the exchange of personal and creative work, participants engaged in individual reflection and in collective meaning-making, where stories became sites of connection, recognition, and dialogue. Storytelling, in this context, functioned as a social practice, bringing together diverse voices across institutional boundaries and creating a shared space in which experiences could be articulated, witnessed, and responded to. Such practices align with the notion that learning and knowledge production are inherently social, emerging through participation and interaction within a community (Lave & Wenger, 1991; Wenger, 1998).

This emergent community reflects key characteristics of communities of practice, including mutual engagement, shared repertoires, and a joint enterprise grounded in writing as both process and product (Wenger, 1998). The act of sharing narratives—particularly those that are personal, creative, or non-traditional—encouraged trust, vulnerability, and reciprocity among participants, strengthening relational bonds. In this way, storytelling extends beyond individual expression to become a collaborative, meaning-making activity that supports both personal and collective development. It also resonates with broader understandings of narrative as a tool for fostering empathy and connection (Bruner, 1991; Frank, 2010).

Importantly, the cross-institutional nature of this initiative highlights the potential of storytelling to create informal yet meaningful networks of support and exchange. By engaging in shared creative practice, participants contributed to a distributed and inclusive community that values multiple forms of knowledge and expression. This reflects growing recognition within higher education of the importance of collaborative, participatory, and relational approaches to scholarship (Wenger-Trayner & Wenger-Trayner, 2015).

Implications for Academic Development (and Teaching)

Taken together, these narratives demonstrate an important implication for academic development and professional learning in higher education, particularly in relation to fostering reflective, relational, and creative pedagogical practices. If, as this project suggests, storytelling can surface tacit knowledge, deepen reflection, and build relational communities, then it offers a valuable approach for fostering reflective, relational, and creative pedagogical practice.

Engaging educators in storytelling and creative inquiry offers a space to critically examine their own identities, assumptions, and positionalities within teaching and research. As highlighted in narrative

inquiry literature, such processes are not without tension; they require educators to navigate issues of credibility, authority, and vulnerability, which are often underexplored in formal professional development contexts (Bacova & Turner, 2023; Clandinin & Caine, 2013). However, it is precisely this engagement with vulnerability that can deepen reflective practice, enabling more authentic, empathetic, and contextually responsive approaches to teaching.

Positioning narrative and creative practices within academic development also aligns with broader shifts towards participatory, inclusive, and person-centred pedagogies in higher education. By first embedding these approaches within educator-focused spaces, this study highlights the importance of creating supportive environments where practitioners can experiment with alternative forms of expression and knowledge-making. This preparatory work is critical before extending such methods into student–staff partnerships, where power dynamics, assessment structures, and institutional expectations add further complexity (Healey et al., 2014; Matthews, 2017). In this sense, working with educators as participants allows for a more nuanced understanding of the affordances and challenges of narrative-based approaches, supporting more thoughtful and ethically grounded integration into teaching practice.

Furthermore, these findings contribute to ongoing discussions around academic identity and professional learning as socially situated and continuously evolving processes. Creative and narrative methodologies can support the development of communities of practice that value dialogue, reflexivity, and multiple ways of knowing, thereby challenging dominant norms of academic writing and knowledge production (Wenger, 1998; Barnett, 2009).

5. Limitations

This study has some limitations. Participants were from a range of disciplines and roles across universities in the UK and Australia, and all were English-speaking, which may limit the transferability of findings to other linguistic and cultural contexts. While some participants were from creative arts disciplines, most were not, and no prior experience with creative writing or storytelling was assumed. All participants, however, had an existing interest in neurodiversity and education, which may shape the perspectives represented. The project was exploratory in nature and did not seek to formally evaluate the efficacy of storytelling on knowledge or skill development. Rather, it represents an initial phase of a larger, ongoing inquiry.

We acknowledge the contributions of the additional participants in the project whose story artefacts do not feature in this specific article. All participants were invited to contribute, but some declined due to workload commitments.

6. Conclusion

In conclusion, our project suggests that storytelling is not simply an adjunct to academic development, but a meaningful practice in its own right. The authors, by immersing themselves in narrative storywriting around neurodivergent teaching, have formed a community of practice that weaves diverse and experiences voices into academic discourse. In doing so, the work engages with established epistemological approaches to knowledge-making through experimentation with written form, leaning towards possibilities for inclusion and diversity rather than prescribing fixed models, and offering instead an alternative mode of educative, pedagogical exploration.

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Appendix 1: Webpage link to Creative Pedagogies

https://sites.google.com/view/creativepedagogies/2025-collaborations/neuro-affirming-stories

Appendix 2: Link to the padlet

https://osf.io/pfxke/files/2kr3u

Appendix 3: Webpage link to OSF for full narratives

https://osf.io/pfxke

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AI and Inclusive Education in the African Context: Navigating Digital Divide Gaps, Building Equitable Futures

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Abstract

This position paper argues that the rapid, largely uncritical adoption of artificial intelligence (AI) in education, defined here as computational systems capable of language understanding, pattern recognition, and adaptive learning, risks deepening longstanding digital inequities in Sub-Saharan Africa, with disproportionately severe consequences for children with disabilities. Drawing on regional infrastructure data (GSMA, 2024; International Telecommunication Union, 2024), policy analyses (UNESCO, 2023; United Nations, 2024a), and emerging African-led scholarship (Anokwuru et al., 2025; Muchandiona et al., 2025), we demonstrate how uneven access to electricity, broadband, devices, and digital literacy undermines equitable AI integration in inclusive education systems.

AI-enabled tools, including text-to-speech, real-time captioning, adaptive platforms, and multilingual assistive technologies, hold documented potential to support learners with disabilities (Fitas, 2025; Salhab, 2025). However, these benefits remain concentrated in urban, well-resourced contexts. In rural and low-income settings, where infrastructure deficits are most acute (International Energy Agency, 2024; World Bank, 2024), children with disabilities experience compounded exclusion. While

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challenges are significant, targeted investments and context-specific adaptations can make the deployment of inclusive AI feasible even in resource-limited settings. Their absence, therefore, constitutes a disproportionate educational harm rather than a shared inconvenience (Mpu, 2023; Muchandiona et al., 2025).

We synthesize current evidence to (a) map how digital infrastructure and AI adoption intersect with disability inclusion across South Africa, Kenya, Ghana, and Nigeria; (b) identify structural gaps in teacher preparation, assistive technology deployment, and culturally responsive AI design; and (c) propose an equity-centered research and policy agenda grounded in participatory, disability-led approaches. The paper calls for coordinated, locally anchored investment to ensure AI narrows, rather than entrenches, educational exclusion.

Keywords: Artificial Intelligence, inclusive education, digital divide, African context, educational equity

1. Introduction

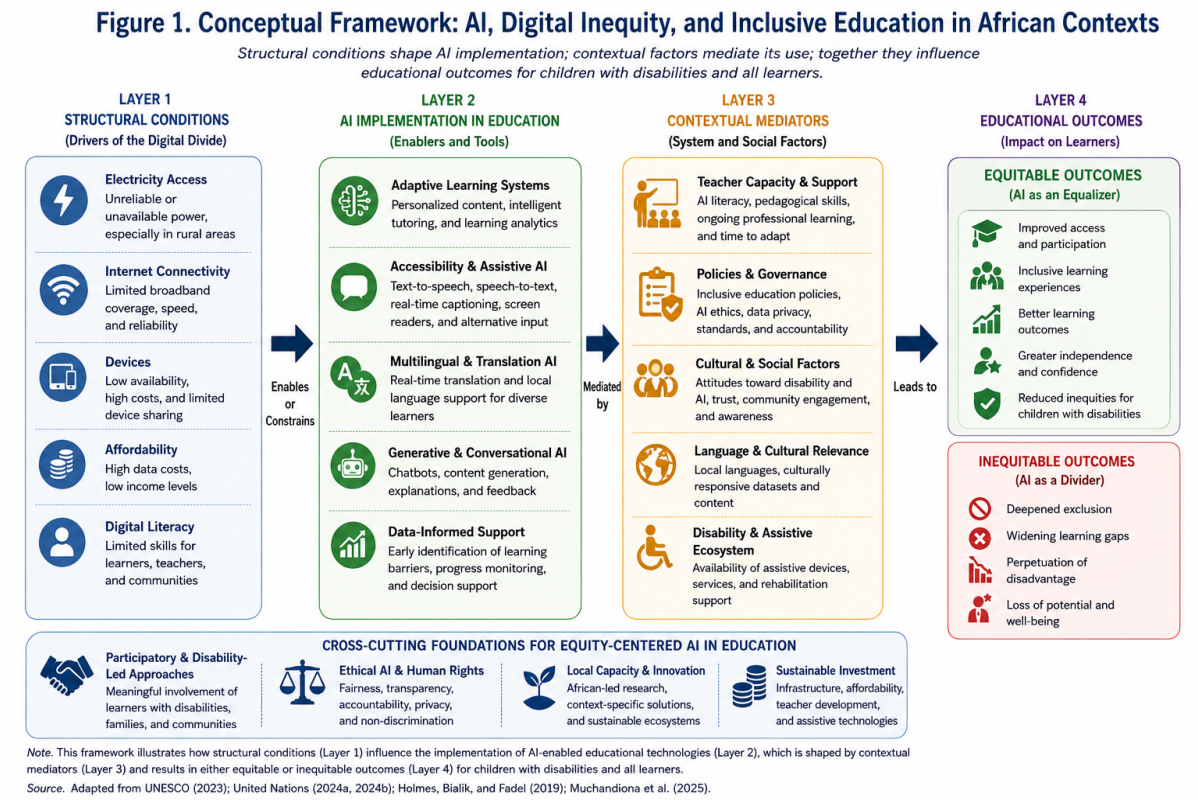
The digital divide describes the gap between population segments in their ability to access, use, and benefit from information and communication technologies (ICTs) (Brookings, 2024; United Nations, 2024a). Artificial Intelligence (AI), understood in this paper as computational systems capable of language understanding, pattern recognition, adaptive learning, and generative content creation, sits at the leading edge of this divide. While AI holds documented potential to transform education through personalized instruction, accessibility tools, and assistive technologies (Fitas, 2025), there is mounting concern that its expansion may deepen existing inequities, particularly for populations already underserved by digital infrastructure.

Throughout this paper, "inclusive education" refers to educational systems that guarantee every child, including those with disabilities and neurodivergent learners, not merely physical placement in mainstream settings, but meaningful access to quality instruction and full participation in school life (Horne-Shuttleworth et al., 2024; UNESCO, 2023). "Children with disabilities" is used in alignment with the United Nations Convention on the Rights of Persons with Disabilities (CRPD), which understands disability as arising from the interaction between individual impairments and environmental and attitudinal barriers (United Nations, 2024b). This social model framing is central to our analysis: barriers to AI-enabled learning are structural and systemic, not inherent to learners themselves.

Although the paper addresses continental patterns, our analysis centers on Sub-Saharan Africa, with illustrative examples drawn from South Africa, Kenya, Ghana, and Nigeria. These four countries were selected because they represent varied levels of digital infrastructure development, policy maturity, and inclusive education implementation (GSMA, 2024; International Telecommunication Union, 2024; World Bank, 2024). This focused lens guards against treating Africa as a homogeneous entity while enabling meaningful cross-country comparison. We draw on three categories of evidence: infrastructure and connectivity data (International Energy Agency, 2024; ITU, 2024; World Bank, 2024) policy and governance reports (UNESCO, 2023; United Nations, 2024a, 2024b) and peer-reviewed scholarship on inclusive education, disability, and AI (Artiles, 2023; Genovesi et al., 2024; Muchandiona et al., 2025). Grounding claims explicitly in these sources allows us to distinguish evidence-based analysis from speculative narratives surrounding AI in education.
In Africa, the digital divide is both long-standing and multidimensional. Only about 38% of the continent's population is online, far below the global average of 68% (Ecofin, 2025; United Nations, 2024a). Mobile broadband is expanding, but reliability, cost, electricity supply, device availability, and digital skills remain deeply uneven especially in rural, remote, and low-income communities. Women and girls, people with disabilities, and rural populations face the sharpest disadvantages (Africa Renewal, 2024; Brookings, 2024).

Within this context, children with disabilities encounter compounded barriers (Anokwuru et al., 2025). Inclusive education policies across much of Africa remain under-resourced and weakly implemented, with chronic shortfalls in teacher training, assistive technology, and institutional support (Genovesi et al., 2024). When AI-enabled tools are deployed, they tend to reach urban, better-resourced schools first, raising the prospect that AI, rather than closing inclusion gaps, may entrench them further.

This paper positions children with disabilities at the center of analysis and is organized as follows. Section 2 maps the current state of digital access and infrastructure across the four focus countries. Section 3 examines AI's potential and risks for inclusive education. Section 4 addresses teacher education, research equity, and knowledge production. Section 5 analyzes assistive technology adoption and cultural barriers. Section 6 proposes a coordinated equity-centered agenda for policy, practice, and research. Across all sections, this paper pursues three aims: to map how digital infrastructure and AI adoption intersect with disability inclusion; to identify structural gaps in teacher preparation, assistive technology, and AI design; and to ask, ultimately, who is served by AI in African education and who is being left behind. Figure 1 below visually presents the conceptual framework guiding this paper.



Note. This framework illustrates how structural conditions (Layer 1) influence the implementation of AI-enabled educational technologies (Layer 2), which is shaped by contextual mediators (Layer 3) and results in either equitable or inequitable outcomes (Layer 4) for children with disabilities and all learners.
Source. Adapted from UNESCO (2023); United Nations (2024a, 2024b); Holmes, Bialik, and Fadel (2019); Muchandiona et al. (2025).

Note. In figure 1, this framework illustrates how structural conditions influence the implementation of AI-enabled educational technologies (AIEd), which are mediated by contextual enablers, barriers, and intersecting inequities to produce either equitable or inequitable educational outcomes for children with disabilities and neurodivergent learners in Sub-Saharan African contexts (see Figure 1).

2. Current Reality of the Digital Divide in Africa

Access to Devices and Connectivity

Despite rapid growth in mobile technology, Africa continues to experience wide digital disparities, particularly in access to devices and internet services. Internet penetration remains significantly lower

than the global average, with only about 36% of individuals in Africa using the internet as of 2023, compared to 67% globally (International Telecommunication Union, 2024). Access is uneven across and within countries. South Africa, for example, has an internet penetration rate exceeding 70%, reflecting greater investment in infrastructure and device ownership, whereas Nigeria and Kenya average around 55–60%, and Ghana remains closer to 50% (GSMA, 2024; ITU, 2024). Affordability also remains a structural barrier. Mobile data costs in many African countries exceed the global affordability benchmark, which defines 1GB of data as affordable if it costs no more than 2% of average monthly income (Alliance for Affordable Internet, 2022; Ecofin Agency, 2025). In Nigeria and Ghana, the cost of 1GB of data often exceeds this threshold, limiting consistent use. At the same time, South Africa and Kenya remain closer to the benchmark but still face affordability gaps for low-income populations (GSMA, 2024). As a result, smartphone ownership remains uneven, and many households rely on shared, basic-feature devices, further widening the digital participation divide, especially in rural areas (ITU, 2024).

Although continental statistics provide a macro-level overview (ITU, 2024), the disparities become clearer when examining country-level contrasts. Across South Africa, Kenya, Ghana, and Nigeria, variations in electricity reliability, broadband penetration, and data affordability produce markedly different conditions for the implementation of educational AI (GSMA, 2024; World Bank, 2024). These infrastructural differences matter particularly for learners with disabilities, who depend more heavily on AI-enabled tools to access the curriculum, a point developed further in Section 3.

Infrastructure Challenges

Infrastructure limitations further constrain digital access across the continent. Consistent electricity is foundational for digital participation, yet millions remain without reliable power. South Africa has near-universal electricity access but experiences chronic load shedding and grid instability. Kenya has expanded access to roughly 75% of households, and Ghana has surpassed 80%, though rural electrification remains inconsistent in both countries (World Bank, 2024). Nigeria faces the most severe energy barrier among the four, with less than 60% of the population having access to electricity and frequent outages that force reliance on costly generators (International Energy Agency, 2024). Broadband infrastructure mirrors this inequality. South Africa has the most advanced network and the highest 4G/5G availability; Kenya is rapidly expanding mobile broadband through its innovation economy; Ghana is building capacity more gradually; and Nigeria, despite a large technology market, struggles with coverage reliability and high data costs (GSMA, 2024). These structural gaps in electricity, broadband, and network reliability limit not only individual connectivity but also the scalability of national digital programs and, critically, the assistive-technology initiatives that children with disabilities depend upon.

Social-Cultural and Policy Barriers for Persons with Disabilities

For people with disabilities, the digital divide is compounded by socio-cultural, educational, and policy constraints. Weak enforcement of accessibility policies, pervasive stigma toward disability, and low digital literacy combine to restrict equitable access to technology (Akhter et al., 2025; United Nations, 2024b). Across the four focus countries, disability advocacy movements are growing, but national accessibility regulations remain unevenly implemented. Kenya and South Africa have stronger legal frameworks, yet accessible content and assistive-technology adoption still lag well behind need (UNESCO, 2024). In Nigeria and Ghana, cultural stigma and limited institutional support further restrict access to training, affordable devices, and inclusive design (United Nations, 2024b). Because accessible hardware, software, and assistive technologies remain expensive and scarce, individuals with disabilities are significantly less likely to use mobile internet or benefit from digital learning platforms (GSMA, 2024). Closing this gap requires not only infrastructure investment but also the active

implementation of disability-inclusive policies, targeted subsidies for assistive technologies, investments in local capacity, and the meaningful involvement of persons with disabilities in decision-making processes (GSMA, 2024; United Nations, 2024b). These barriers are not merely technical. They reflect deeper patterns of exclusion that AI adoption, if unmediated, risks reproducing at scale. The following sections examine both AI's potential to disrupt this cycle and the structural conditions that determine whether that potential is realized.

3. AI and Inclusive Education: Opportunities and Risks

Inclusive Education and AI's Potential

The promise of AI for inclusive education lies in its capacity to align with Universal Design for Learning (UDL) principles, offering multiple pathways for engagement, representation, and expression. Critically, AI is not simply a more efficient version of general educational technology (EdTech). Unlike conventional digital tools such as presentation software or online learning management systems; AI-specific educational tools (AIEd) are distinguished by their capacity for real-time adaptation, natural language processing, and personalized response generation (Holmes et al., 2019). Text-to-speech, real-time captioning, AI-generated braille, and adaptive learning platforms are AIEd tools with particular relevance to learners with disabilities; they can open qualitatively new opportunities for participation, but only if devices are affordable, platforms are localized, and teachers are prepared to integrate them meaningfully (UNESCO, 2024). Effective inclusive education involves more than the physical placement of students in mainstream settings; it also requires their access to quality instruction and full participation in school experiences (Horne-Shuttleworth et al., 2024). From a social-model perspective, the challenge is not whether children with disabilities can adapt to AI, but whether AI systems and educational policies can be redesigned to fit them.

Pilot projects in South Africa and Kenya demonstrate that AI-enabled tools can meaningfully enhance the participation of children with disabilities (UNESCO, 2023). However, the limited reach of such programs reflects structural inequities rather than inherent limitations of the technology. Taken together, UNESCO (2023), Fitas (2025), and Salhab (2025) collectively demonstrate AI's technical potential to support accessibility, but infrastructure data from ITU (2024) and GSMA (2024) make clear that these benefits depend on stable connectivity and device access. Without those preconditions, AI-enabled inclusion remains aspirational. The divergence between technological promise and infrastructural reality underscores the central argument of this paper: AI's impact on inclusive education is structurally mediated rather than technologically predetermined.

Personalized Learning and Adaptive Technologies

In inclusive educational settings, educators are expected to manage curriculum design, pedagogical instruction, formative feedback, and the scholarship of learning simultaneously. Assessing diverse student needs is increasingly complex, given variation in learning styles, prior knowledge, cultural backgrounds, and emotional readiness. AI, as defined in this paper, meaning computational systems capable of language understanding, pattern recognition, and adaptive learning; is positioned to address these challenges in ways that general EdTech cannot (Mohammed & Watson, 2019). It is important to distinguish, however, between AI-driven educational tools and the broader EdTech category. Not all digital tools used in education are AI-based: platforms such as Kahoot, Gimkit, or iClicker are valuable EdTech tools for engagement and assessment, but they do not qualify as AIEd because they do not adapt in real time to individual learner profiles (Holmes et al., 2019). By contrast, tools such as JAWS, Kurzweil 3000, Immersive Reader, Read and Write Gold, Goblin Tools, and AI-powered predictive text platforms qualify as AIEd because they employ machine learning to personalize the user experience, and for learners with visual, language-processing, or cognitive

disabilities, they function as essential gateways to curriculum access rather than optional enhancements.

Figure 2. General EdTech vs. AI-Driven Educational Technology (AIEd)

Distinct characteristics, functions, and examples relevant to inclusive education in African contexts

DIMENSION	GENERAL EDUCATIONAL TECHNOLOGY (EDTECH) Rule-based / Human-operated / Static	AI-DRIVEN EDUCATIONAL TECHNOLOGY (AIEd) Data-informed / Adaptive / Intelligent
Technology Nature	**Static tools and platforms** Deliver the same content and functions to all users.	**Adaptive and intelligent systems** Use algorithms and data to learn from users and adjust in real time.
Personalization	**Limited or no personalization** One-size-fits-all content; users must adapt to the system.	**High personalization** Tailors content, pace, and supports to individual learning profiles and needs.
Learning Support	**General support tools** Provide resources (e.g., videos, worksheets) but do not adapt to learner performance.	**Intelligent learning support** Provides adaptive feedback, hints, scaffolding, and predictive interventions.
Data Use	**Minimal data use** Tracks basic usage or completion (e.g., logins, time).	**Advanced data analytics** Analyzes patterns, predicts challenges, and informs instructional decisions.
Accessibility Potential	**Accessibility by design (if included)** Features are fixed; updates require human redesign.	**Dynamic and inclusive accessibility** AI enables real-time adjustments (e.g., text-to-speech, auto-captioning, language translation).
Examples	• Google Classroom (LMS) • Kahoot! • PowerPoint • YouTube	• Immersive Reader (Microsoft) • Goblin Tools • ChatGPT (educational use) • Text-to-Speech & Real-Time Captioning Tools
Decision-Making	**Human-driven** Teachers and learners make all decisions based on available information.	**Human-AI partnership** AI informs and recommends; humans make final pedagogical decisions.
Offline / Low Connectivity	**Often functional offline** Many tools work with low or no internet.	**Often requires connectivity (but evolving)** Many AI tools need data/cloud access; offline AI models are emerging.
Key Takeaway	While general EdTech delivers content and facilitates instruction, AI-driven educational technologies (AIEd) learn from data to personalize, accommodate, and empower learners—offering powerful potential to advance inclusion for children with disabilities in African contexts when equitably implemented.	

Note. Figure 2 distinguishes general educational technology (EdTech) from AI-driven educational technology (AIEd) across key dimensions; including personalization, accessibility, language responsiveness, and adaptive features highlighting the particular significance of AIEd for inclusive education and learners with disabilities and neurodivergent learners in Sub-Saharan African contexts (see Figure 2).

Salhab (2025) argues that leveraging AIEd in inclusive education can promote universal accessibility for all learners, with particular benefits for those from marginalized communities. Aguilar et al. (2021) further suggest that integrating AI into educational platforms enhances personalized learning, increases accessibility, and helps overcome barriers for diverse students. Inclusive education in the Global South, however, faces significant structural challenges, including insufficient funding, a lack of institutional recognition, and difficulties in equitably addressing individual learning needs (Artiles, 2023; Uthus & Qvortrup, 2024). Overcoming these challenges requires substantial investment from governments and public-private partnerships (Anokwuru, 2023). However, Zabeli and Gjelaj (2020) observe that many educators currently lack the competencies needed to integrate AI into inclusive classroom practice. Professional development must therefore go beyond basic digital skills to encompass hands-on experience with AIEd tools, an understanding of their limitations and biases, and the pedagogical knowledge to deploy them in ways that genuinely serve learners with disabilities. Zhang and Zhang (2024) confirm that where such preparation exists, AI positively influences teaching through enhanced classroom management, personalized strategies, enriched digital learning, and stronger social relationships among students.

Risk and Inequities

AI also poses significant risks, especially in under-resourced contexts. Privacy is a primary concern: AI-enabled tools extensively access and process learner data, and implementing adequate safeguards encryption, secure storage, regulated data collection, and compliance with student data protection

standards requires investment that many African schools cannot sustain. This creates conditions in which students, particularly those with disabilities whose use of assistive tools generates additional data, may be exposed to exploitation or misuse. Chitiyo et al. (2024) emphasize the need for teacher education curricula that explicitly address these risks, equipping educators to advocate for learners rather than simply operate the tools.

Cultural and algorithmic bias present an equally serious concern. AI systems are trained on large datasets that reflect the priorities and perspectives of their creators, who are predominantly located in the Global North. In African and Global South contexts, this means that datasets may perpetuate biases related to skin color, language, and cultural norms, resulting in the marginalization of learners with diverse needs (Smith & Oladipo, 2024). For neurodivergent learners; including those with autism, ADHD, dyslexia, or dyscalculia, this risk is compounded: tools calibrated for neurotypical, English-speaking users may misread their responses, misclassify their needs, or generate content that is inaccessible to them. Professional development initiatives must therefore cultivate not only technical competence but also the critical awareness to identify, question, and challenge these embedded biases (Smith & Oladipo, 2024).

Implications for Children with Disabilities

In digitally equipped, well-resourced urban schools, learners with disabilities may, in some cases, benefit disproportionately from AIEd tools when they are the primary recipients of assistive technologies. AI-enabled captioning, screen readers, predictive text, and adaptive platforms can significantly enhance participation and align with UDL principles where infrastructure and trained educators are in place (Fitas, 2025; UNESCO, 2023; Zhang & Zhang, 2024).

However, such contexts are the exception rather than the norm across Sub-Saharan Africa. Reliable internet, electricity, and device access remain unevenly distributed (ITU, 2024; World Bank, 2024). For learners without disabilities, the absence of AI tools may represent a missed opportunity for enrichment. For learners with disabilities, it is categorically different: as Mpu (2023) notes, assistive technologies frequently serve as gateways rather than enhancements, providing the basic access to curriculum that nondisabled peers obtain without technological mediation. When those gateways are absent, educational exclusion is magnified rather than equalized. Muchandiona et al. (2025) illustrate this dynamic among visually impaired learners, where AI-enabled tools could provide access to reading materials but remain inaccessible due to cost and infrastructure constraints.

The impact of digital inequity is therefore not symmetrical. Learners with disabilities often experience a "double digital divide": first, unequal access to general connectivity; and second, limited availability of accessible, localized assistive technologies. This distinction clarifies why the absence of AI constitutes a proportionally greater educational disruption for children with disabilities than for their nondisabled peers and why equity arguments for AI investment are especially urgent in this population. This asymmetry threads through every subsequent section of the paper.

Impact on Learning Outcomes, Participation, and Equity

Rural–urban disparities further deepen these inequities. Students in rural areas face compounded disadvantages, including limited connectivity, limited access to devices, and restricted exposure to digital technologies. Mwansa et al. (2025) found that more than half of respondents in rural South Africa lacked reliable internet access, citing affordability as the primary barrier. In Ghana, rural households report significantly lower internet access than urban centers, limiting students' participation in digital learning (Opoku et al., 2017). In Nigeria, unreliable electricity and high data costs continue to marginalize rural communities despite steady urban infrastructure growth (Adebayo et al., 2021). Tanzania faces comparable challenges, with rural schools frequently lacking reliable internet and trained personnel to

integrate AI tools into instruction (Mtega et al., 2018). Urban students in these countries, by contrast, generally have greater access to infrastructure and resources, widening the gap in digital literacy and participation. These rural–urban patterns illustrate how AI-driven educational initiatives often reinforce rather than reduce preexisting inequalities.

Intersectionality

Gender adds another critical dimension. Female learners, particularly in rural and low-resource contexts, often face limited access to shared devices, lower confidence in engaging with technology, and increased domestic responsibilities that constrain their study time, resulting in fewer opportunities to benefit from AI-enabled platforms (Constancio et al., 2025). Socioeconomic status compounds this: learners from lower-income households are less able to afford devices, pay for data, or maintain stable electricity access, and even when AI-based programs are theoretically available, high connectivity costs exclude the most economically disadvantaged students (Miah, 2024).

Persons with disabilities, and neurodivergent learners in particular, experience the most severe exclusion. Zongozzi et al. (2025) found that many higher education programs intending to include students with disabilities fail to provide adequate accommodations or accessible platforms. Buthelezi (2024) similarly reported that people with disabilities in KwaZulu-Natal faced marginalization in digital access, often having limited or no access to necessary technology. Even when devices or AI applications exist, they are frequently inaccessible: voice assistants may not recognize local languages; user interfaces may be poorly designed for users with motor or cognitive impairments; and training opportunities are scarce. For neurodivergent learners specifically, the situation is worsened by the absence of culturally adapted tools that account for diverse cognitive profiles; a gap that AI, properly designed, is uniquely positioned to address through adaptive and personalized learning features (Holmes et al., 2019).

Taken together, these intersecting factors; rural residence, gendered constraints, socioeconomic inequality, disability, and neurodivergence demonstrate that digital inequity in Africa is not a single-issue problem but a complex web of overlapping disadvantages. A rural female student with dyslexia and limited economic means, for example, encounters multiple simultaneous barriers: she may lack affordable internet, find that available AI tools do not support her mother tongue, and face societal expectations that limit her study time. Without intentional, intersectional strategies, AI and digital education risk perpetuating the very inequities they claim to resolve.

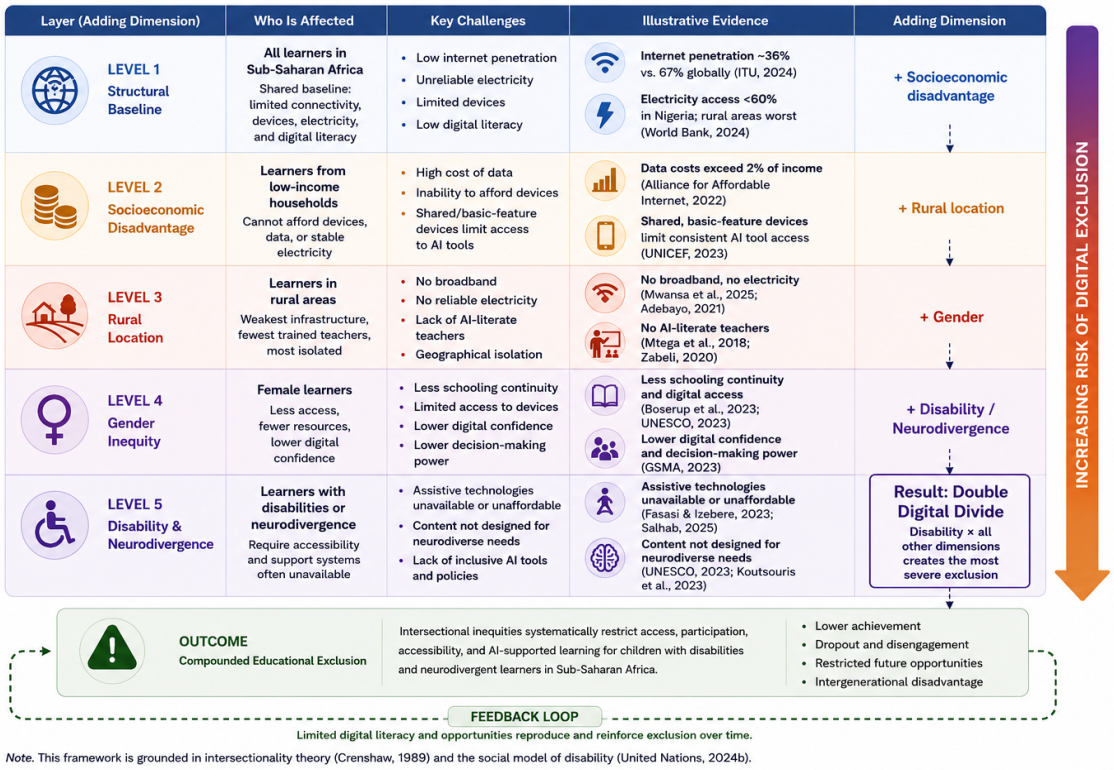
Note. Grounded in intersectionality theory (Crenshaw, 1989) and the social model of disability, figure 3 illustrates how overlapping dimensions of inequity including poverty, rurality, gender, disability, and neurodivergence do not operate independently but interact to compound barriers to AI-enabled learning and educational participation for children with disabilities and neurodivergent learners in Sub-Saharan African contexts (see Figure 3).

4. Implications for Teacher Education and Research

The rapid integration of AI into education in Africa brings both opportunities and challenges for teacher preparation and research. AI-enabled tools have the potential to be transformatively inclusive, but they require educators to possess both technical and critical pedagogical competencies. Gaps in teacher education, research infrastructure, and knowledge systems currently threaten to undermine AI's capacity to support children with disabilities and neurodivergent learners.

Figure 3. Intersectionality and Compounded Digital Exclusion

Each additional dimension intensifies barriers to AI-enabled learning in Sub-Saharan Africa



Note. This framework is grounded in intersectionality theory (Crenshaw, 1989) and the social model of disability (United Nations, 2024b).

Teacher Education: Addressing Digital and AI Literacy Gaps

Myrie et al. (2024) emphasized that effective teacher education programs are critical for preparing educators with the theoretical knowledge and practical skills needed to meet diverse student needs. A significant challenge for inclusive education in Africa is the limited integration of AI and digital literacy into pre-service and in-service training. As Zabeli and Gjelaj (2020) observe, many educators lack the competencies needed to effectively incorporate AI into inclusive classrooms for students with diverse abilities. This is compounded by the understanding that inclusive education requires not merely placing students with disabilities or neurodivergent learners in mainstream settings, but ensuring their access to high-quality instruction and meaningful participation in all aspects of school life (Horne-Shuttleworth et al., 2024).

Educators need more than foundational digital skills. Professional development must build expertise in AIEd tools specifically relevant to inclusive practice: speech-to-text and text-to-speech applications, semantic and image recognition, real-time captioning, adaptive platforms, and AI-powered tools such as JAWS, Kurzweil 3000, Immersive Reader, Read and Write Gold, Goblin Tools, and braille translators. These are not general EdTech tools; they are AI-driven systems that require specific training to deploy effectively for learners with visual, auditory, language-processing, and cognitive disabilities; including neurodivergent learners who may benefit from personalized pacing, reduced cognitive load, and multimodal content delivery. However, such tools are rarely integrated into teacher training programs in Africa.

Chitiyo et al. (2024) advocate for systemic reform to integrate AI literacy and UDL principles from the outset of teacher education. Zhang and Zhang (2024) confirm AI's positive impact on teaching, where preparation is adequate. To realize these benefits, teachers must be equipped not only to use AI tools but to critically evaluate them for bias, cultural relevance, and accessibility. Curricula should incorporate the social and ethical dimensions of AI, including data privacy, algorithmic bias, and the

particular vulnerabilities of learners with disabilities (Smith & Oladipo, 2024). Resource limitations complicate these efforts: in under-resourced environments, sustaining continuous professional development on evolving technologies is a significant barrier (Genovesi et al., 2024). This reinforces the case for investment in teacher capacity as a foundational, rather than supplementary, element of inclusive AI deployment.

Educational Research: Strengthening African-Led Scholarship

A parallel challenge exists in educational research. Limited African-led scholarship on AI, disability, and inclusion constrains knowledge production and weakens the policy evidence base. Most research originates from high-income countries with assumptions and priorities that do not always align with African contexts (Artiles, 2023), leaving local educators and policymakers reliant on externally designed tools and frameworks. African universities and research institutions frequently lack the funding, infrastructure, and access to datasets necessary to conduct rigorous studies on AI and disability inclusion (UNESCO, 2024). Without relevant local evidence, policymakers may implement AI strategies that are contextually inappropriate, and educators may lack actionable guidance on adapting global tools to local needs.

Pilot projects in South Africa and Kenya illustrate AI's potential to improve participation for children with disabilities (UNESCO, 2023). However, their limited scale reflects broader structural inequities rather than AI's inherent limitations. Expanding the regional evidence base through African-led research is therefore not an academic aspiration but a practical prerequisite for scaling effective interventions and avoiding the harms of poorly adapted solutions.

Knowledge Production Inequities: Dependence on Global North Frameworks

The dependence on Global North-produced tools and frameworks represents a structural inequity in knowledge production with direct implications for learners with disabilities. This dependence manifests in reliance on proprietary AI systems developed by multinational corporations, the adoption of pedagogical frameworks designed for high-resource contexts, and the implementation of accessibility standards that do not adequately reflect African linguistic and cultural diversity.

Language is where this inequity is most starkly visible. Digital tools are overwhelmingly designed for English, French, or Portuguese, reflecting the enduring legacies of colonialism and global market forces. This excludes learners whose mother tongues are among Africa's 2,000 languages (Masakhane, 2023). AI trained predominantly on high-resource languages performs poorly in African linguistic contexts: voice assistants fail to recognize local accents, translation tools produce inaccurate output, and text-to-speech applications mispronounce or omit key words (Muchandiona et al., 2025). For children with disabilities and particularly for neurodivergent learners who may depend on consistent, accurate auditory or textual support; linguistic exclusion adds a further barrier that can effectively deny participation in AI-enhanced learning. A screen reader that cannot render Swahili, Yoruba, or Zulu is simply non-functional for a blind student in Kenya, Nigeria, or South Africa. Real-time captioning trained only on standardized English also fails in multilingual classrooms where code-switching and local dialects are the norm (Fitas, 2025).

The Masakhane NLP project offers an important counter-model. This Pan-African initiative is building AI tools; including offline-capable translation and speech technologies for nearly 50 African languages, developed by African researchers using African data (Masakhane, 2023). Masakhane's approach demonstrates that, with appropriate investment in local expertise and collaborative infrastructure, Africa can generate AI tools that are linguistically accurate, culturally relevant, and accessible to learners with disabilities, without reliance on expensive proprietary licenses. Beyond language, the dependence on Global North frameworks extends to pedagogical approaches and research

methodologies. UDL, for instance, was primarily developed in North American contexts; its application in Africa requires critical adaptation for different resource levels, cultural values, and educational priorities (Mohammed & Watson, 2019). Research methodologies that privilege quantitative measures and individual outcomes may also overlook the collective, community-oriented approaches that characterize many African educational contexts (Anokwuru et al., 2025). Addressing knowledge production inequities, therefore, requires not only improved access to tools but recognition of epistemic justice; the principle that knowledge generated in and from African contexts is equally valid and valuable.

Role of Researchers: Participatory Approaches and Local Engagement

Addressing these challenges requires a fundamental shift in how AI and disability research are designed and conducted. Disability-led organizations must be at the center of these processes. Persons with disabilities possess first-hand knowledge of the barriers they encounter and the accommodations they require, making their insights essential for designing genuinely inclusive AI systems (United Nations, 2024b). However, disability advocacy in many African countries remains marginalized, with limited influence on policy or resource allocation (UNESCO, 2024). Strengthening these organizations' institutional capacity and ensuring their active participation in education planning, technology governance, and AI research and development are prerequisites for equity, not optional enhancements.

Participatory research approaches position persons with disabilities, educators, and community members as co-investigators and knowledge producers rather than research subjects. This aligns with the social model of disability, which attributes exclusion to environmental and systemic barriers rather than individual deficits (Muchandiona et al., 2025). Research conducted with rather than on communities is more likely to generate actionable insights, build local capacity, and produce sustainable change. Community involvement should encompass teachers, parents, and caregivers, who are the primary users and mediators of AI tools in schools (Chitiyo et al., 2024; Zabeli & Gjelaj, 2020).

Cross-sector collaboration is equally essential. Initiatives such as the GDI Hub roundtables, the Equitable AI Alliance, and Global Alliance Africa's UK-Africa innovation partnership each demonstrate that meaningful change requires coordination across sectors, anchored in the lived expertise of those most affected (Global Disability Innovation Hub, 2024). The African Union's Continental AI Strategy and UNESCO's Recommendation on the Ethics of Artificial Intelligence (2021) provide continental and global ethical frameworks that must inform all AI research, procurement, and deployment decisions affecting persons with disabilities. Strathmore University's CIPIT research similarly identifies policy safeguards and representative datasets as non-negotiable prerequisites for equitable AI adoption in Africa (Kaaniru, 2023). Researchers must engage these frameworks actively, providing evidence, facilitating stakeholder dialogue, and amplifying the voices of marginalized communities in policy processes.

5. Assistive Technology and the African Context

AI-enabled assistive technologies (AT) are transforming inclusive education globally. In Africa, however, contextual barriers mean that this transformation remains largely unrealized. Fitas (2025) identifies the key enablers; internet access, translation support, hardware, teacher training, and cultural and ethical assurance, as consistently absent in rural and under-resourced institutions, precisely where the majority of children with disabilities in Sub-Saharan Africa are educated.

Several factors compound this gap. Cost is the most frequently cited barrier: the majority of AI-enabled AT tools are imported and priced far beyond the budgets of schools and households (Abdelwahab et al., 2025). Infrastructure deficits; particularly unreliable electricity, prevent schools from

consistently powering and maintaining these technologies. Perhaps most insidiously, stigmatization of disability leads many communities to view investment in assistive tools as wasteful, deprioritizing already-scarce resources (Goyal, 2025; Muchandiona et al., 2025; Ndibalema & Kambona, 2023). While high-income countries are rapidly integrating AI into disability strategies and inclusive education frameworks, African nations are still constructing the foundational policy and infrastructure conditions for such integration (Shafik, 2025).

Locally adaptable, low-cost, and open-source innovations offer a viable pathway forward. AI tools developed in local languages can provide scalable alternatives that circumvent licensing costs and reduce language exclusion (Muchandiona et al., 2025). Offline-capable applications such as text-to-speech tools that function without internet connectivity are especially valuable in rural areas. The Masakhane NLP project exemplifies this approach: its offline-ready translation and speech technologies, developed by African researchers using African language data, support learners with visual and language-processing disabilities while simultaneously building local AI literacy capacity (Masakhane, 2023). Community-driven solutions have demonstrated that with creative adaptation and genuine community ownership, AI-enabled assistive technologies can be made both affordable and contextually appropriate. Scaling these approaches requires policy environments that support grassroots innovation, funding mechanisms that prioritize local capacity-building over imported solutions, and governance frameworks ensuring communities retain meaningful control over the tools that shape their children's education.

6. Cultural and Societal Considerations

Attitudes Toward Disability and Technology Adoption

Cultural attitudes toward disability significantly shape the adoption and effectiveness of AI-enabled assistive technologies in African education. The dominant cultural framework in many communities remains a deficit-oriented medical model that frames disability as an individual impairment to be managed, rather than a social model that locates exclusion in environmental and systemic barriers (Muchandiona et al., 2025). Deep-seated stigma frames disability as shameful or as a form of divine punishment, prompting some families to conceal children with disabilities or limit expectations for their education (Anokwuru et al., 2023; Ndibalema & Kambona, 2023). Such beliefs directly affect resource allocation: where disability is treated as a fixed condition, investment in assistive technologies is readily dismissed as wasteful (Goyal, 2025).

This stigmatization creates a self-reinforcing cycle of exclusion. Schools with constrained budgets deprioritize AI-enabled assistive devices, often justifying this by arguing there are too few learners with disabilities to merit the expense (Muchandiona et al., 2025). Teachers who hold ableist assumptions may doubt the educability of students with disabilities and perceive technology as a superficial substitute for genuine inclusion rather than a meaningful pathway to participation (Chitiyo et al., 2024). Parents and caregivers facing economic hardship and social pressure may hesitate to advocate for accommodations. Even where assistive technologies are available in principle, these attitudinal barriers frequently prevent their meaningful integration into practice.

Shifting these attitudes requires intentional, sustained engagement at multiple levels. Disability awareness campaigns must center the voices and lived experiences of persons with disabilities to challenge stereotypes and demonstrate the transformative potential of practical technological support (United Nations, 2024a). Teacher education programs must explicitly address attitudinal barriers, equipping educators with both technical skills and a commitment to inclusive pedagogy grounded in human rights (Zabeli & Gjelaj, 2020). Community dialogues involving disability-led organizations, religious leaders, traditional authorities, and local influencers can foster cultural shifts from the ground up. The goal is to reframe disability and neurodivergence as natural dimensions of human diversity

rather than deficits to be hidden or overcome (UNESCO, 2024). Where these foundational attitudes remain unaddressed, AI and assistive technologies will continue to be underutilized regardless of their technical sophistication.

The Role of Local Languages and Cultural Knowledge in AI-Driven Tools

Language is a critical and often overlooked dimension of equitable AI in African education. As noted in Section 4, English, French, and Portuguese dominate digital platforms, creating barriers for learners whose mother tongues are among Africa's 2,000 languages (Masakhane, 2023). This challenge is especially severe for neurodivergent learners and those with visual, auditory, or language-processing disabilities, who frequently rely on AI tools to access information. A screen reader that cannot render Swahili, Yoruba, or Zulu is non-functional for a blind student in Kenya, Nigeria, or South Africa; real-time captioning trained only on standardized English fails in multilingual classrooms where code-switching is routine (Fitas, 2025; Muchandiona et al., 2025). These shortcomings are not inevitable, they result from design choices that systematically favor dominant languages and ignore the linguistic realities of the Global South.

The Masakhane project demonstrates a viable alternative: by prioritizing African researchers, data, and languages, it has produced translation and speech tools that are accurate and tailored to local needs, accessible to learners with disabilities, and openly licensed for use in under-resourced schools and communities (Masakhane, 2023; Muchandiona et al., 2025). Beyond language, cultural knowledge must inform the design and deployment of AI tools more broadly. Educational AI that generates only Western examples may alienate learners, reduce engagement, and damage learning outcomes. AI-driven assessment that assumes universal cultural competencies may misclassify students' learning profiles; including neurodivergent students whose cognitive styles differ from the norms embedded in training data (Fitas, 2025). Addressing these risks requires participatory design from the outset: local educators, learners, families, and disability advocates must help shape AI systems so that cultural knowledge is incorporated by design rather than retrofitted later.

Community Involvement in Shaping AI Use in Education

Genuine community involvement is essential for AI-driven educational tools to support children with disabilities and neurodivergent learners effectively. Top-down technology deployments in which external actors impose systems without consulting end users, have consistently failed to achieve lasting adoption or equity in African educational contexts (Shafik, 2025). Participatory approaches, by contrast, foster ownership, build local capacity, and increase the likelihood that AI tools will meet genuine needs (UNESCO, 2024). Disability-led organizations must anchor these processes. Persons with disabilities possess indispensable first-hand knowledge of the barriers they encounter and the accommodations they require, and their participation in education planning, technology governance, and AI research and development is non-negotiable for equity (Goyal, 2025; United Nations, 2024b).

Community involvement must also encompass teachers, parents, and caregivers as active co-designers rather than passive recipients. Professional development should provide opportunities for teachers to explore AI technologies together, share practical experience, and collaborate on problem-solving (Chitiyo et al., 2024). Parents and caregivers of children with disabilities need accessible information about available assistive technologies, hands-on training in their use, and forums through which to advocate effectively for their children within the education system (Zabeli & Gjelaj, 2020). Community-driven innovations; including low-cost assistive devices built from locally available materials and open-source AI applications adapted for regional languages demonstrate what becomes possible when communities are empowered to shape their own technological futures (Masakhane, 2023; Muchandiona et al., 2025). Scaling these models requires policy environments that recognize and fund grassroots innovation, governance structures ensuring communities retain meaningful control over the

AI tools affecting their lives, and national strategies that position local community knowledge as a resource rather than an obstacle (Shafik, 2025).

7. Toward Equity: A Call to Action

The transformation of African education through AI requires comprehensive, coordinated action across policy, practice, and research. Drawing on the evidence presented throughout this paper, we propose actionable recommendations structured to ensure that AI narrows rather than widens educational exclusion for children with disabilities and neurodivergent learners.

Policy Recommendations

Infrastructure Investment and Digital Access: Governments, international organisations, and private-sector partners must prioritise foundational infrastructure investments, including: (a) reliable, affordable internet access to rural and underserved areas, with subsidised data plans meeting the 2% affordability benchmark; (b) consistent electricity through grid expansion, renewable energy, and backup systems for schools; (c) national programmes providing low-cost, durable devices and AI-enabled assistive technologies with maintenance support; and (d) mandatory accessibility requirements, including multilingual support and UDL adherence in all government-procured AI educational tools.

Inclusive AI Governance Frameworks: AI governance must centre disability rights, ethical safeguards, and participatory decision-making through: (a) meaningful involvement of persons with disabilities including neurodivergent individuals in policy design, implementation, and monitoring; (b) robust data protection regulations requiring informed consent, transparency, and regular algorithmic bias audits; (c) national AI ethics guidelines informed by the African Union's Continental AI Strategy and UNESCO's Recommendation on the Ethics of Artificial Intelligence (2021), addressing bias, cultural representation, and accountability; and (d) inter-ministerial task forces aligning AI investments across education, ICT, disability affairs, and finance ministries.

Disability-Inclusive National Strategies: National development plans must explicitly integrate disability and neurodiversity inclusion by: (a) embedding accessibility requirements in ICT policies and education sector plans rather than treating disability as a separate concern; (b) allocating dedicated, transparently tracked budget lines for assistive technologies and disability-specific professional development; and (c) leveraging public-private partnerships that prioritise local capacity-building, open-source solutions, and sustainable implementation over proprietary imported systems.

Practice Recommendations

Teacher Education and Professional Development: Essential actions include: (a) reforming pre-service curricula to integrate AI literacy, UDL principles, and assistive technology competencies from the outset; (b) providing hands-on professional development on AIEd tools including text-to-speech, real-time captioning, and adaptive platforms; (c) building teachers' critical capacity to evaluate AI tools for bias, cultural relevance, and accessibility; (d) establishing sustained professional learning communities, coaching, and micro-credentialing systems; and (e) incorporating training on data privacy, informed consent, and the ethical dimensions of AI use with vulnerable populations.

Building Local Capacity: Sustainable AI integration requires local expertise and community ownership through: (a) community learning centres providing digital skills training with specialised modules on assistive technologies; (b) support for youth- and women-led technology hubs developing contextually relevant AI applications; (c) dedicated funding for disability-led organisations to co-design and scale AI tools; (d) investment in grassroots initiatives like Masakhane that build NLP tools

for African languages; and (e) strengthened university-community partnerships for participatory research and knowledge translation.

Stakeholder Engagement: Equitable adoption requires all stakeholders to be active participants through: (a) accessible training and information resources empowering families to demand accommodations; (b) mechanisms for students with disabilities and neurodivergent learners to provide feedback and shape implementation; (c) policy incentives motivating schools and teachers to adopt inclusive AI practices; and (d) public awareness campaigns challenging disability stigma and promoting the social model of disability and neurodiversity.

Implementation Principles

Implementation must be guided by: (a) equity-first sequencing, beginning with the most excluded communities; (b) whole-system investment funding the entire ecosystem; power, connectivity, devices, assistive technology, and school-based support rather than isolated pilots; (c) evidence-based decision-making using transparent, publicly accessible metrics; (d) adaptive implementation responsive to local contexts and stakeholder feedback; and (e) long-term commitment that plans for sustained investment, continuous professional development, and technology maintenance and replacement.

AI-driven education holds transformative potential, but only through deliberate, equity-centered action. The challenge is not primarily technological; it is political, social, and ethical. If governments, educators, researchers, disability movements, developers, and funders act collaboratively and with urgency, Africa can pioneer a model of inclusive, locally grounded, and ethically governed AI that ensures every child regardless of ability, neurocognitive profile, geography, or economic status can learn and thrive. The technology must serve learners' realities, amplify their voices, and dismantle rather than reproduce barriers (Mpu, 2024). The choice is clear: invest now in equity, localization, participation, and safeguards, or allow the digital divide to calcify into a permanent learning divide. The time to act is now.

8. Research Agenda

African-led AI and disability inclusion initiatives are reshaping global conversations on equity, innovation, and justice, offering powerful lessons for inclusive development worldwide. Several recent collaborations exemplify the direction this agenda must take.

The AT2030 AI for Disability Inclusion in Africa initiative convened a series of roundtables from February to June 2024, addressing AI and disability inclusion, legal and policy perspectives on access to justice, and innovation perspectives on AI for development in Africa. The overarching conclusions emphasized the need for AI to be developed ethically for persons with disabilities, taking full account of their rights and well-being; for improved digital infrastructure, affordable devices and data, and reliable electricity; and for policy alignment on data safety, ethical AI, and inclusive education (Global Disability Innovation Hub, 2024).

The RAIL Project at Kwame Nkrumah University of Science and Technology (KNUST), in partnership with Assistive Technologies for Disability Trust (AT4D) and Next Step Foundation (NSF), launched a six-month scoping study and stakeholder mapping initiative from March to August 2025, conducting regional consultations in Kenya, Ghana, and Rwanda to establish the evidence base for AI and disability innovation across Sub-Saharan Africa (Hukpati, 2025). Strathmore University's CIPIT report maps AI-enabled assistive technologies in Africa, identifies systemic barriers to their adoption, including unrepresentative training datasets, insufficient policy safeguards, digital skills gaps, and funding shortfalls and recommends concrete steps toward equitable deployment (Kaaniru, 2023).

These initiatives are most effective when deeply collaborative, bridging academia, civil society, government, and technology developers. The GDI Hub roundtables, the Equitable AI Alliance supported by the Zero Project, and Global Alliance Africa's UK-Africa innovation partnership each demonstrate how coordination across sectors anchored in the lived experience of persons with disabilities, can drive meaningful and sustainable change (Global Disability Innovation Hub, 2024).

Global Solidarity: Implications Beyond Africa

The challenges described throughout this paper do not exist in isolation. As UNAIDS Executive Director and UN Under-Secretary-General Winnie Byanyima observed, the world confronts a global crisis of inequality, conflict, climate change, and authoritarianism that no country can address alone. Her call for a common cause across communities, continents, and governments is directly applicable to AI and inclusive education: solidarity, she argues, is a superpower. The COVID-19 pandemic made these dynamics starkly visible. When schools closed globally, students with disabilities bore a disproportionate share of the harm: without physical school environments, and without access to AI-enabled assistive technologies, many lost their primary route to quality education; the right enshrined in Sustainable Development Goal 4 (SDG-4). The pandemic also revealed how inequitably digital infrastructure, devices, and AI tools were distributed, with low- and middle-income countries in the Global South left without the technological resources available to wealthier nations.

The SDGs, signed by all United Nations member countries in 2015, represent a global solidarity movement committing every nation to a better future for all. For Africa and the Global South, SDG-4 quality education for all cannot be achieved without addressing the digital divide that conditions AI's impact on inclusive education. The lessons of this paper, therefore, carry implications beyond Africa: the structural inequities documented here in infrastructure, language, cultural design, governance, and knowledge production are most acutely concentrated in the Global South but are not unique to it. A genuinely global commitment to equity in AI and inclusive education requires that the Global North recognize its role in these inequities, invest in African-led solutions, and allow the innovations emerging from African researchers, disability advocates, and communities to shape the global AI agenda.

9. Conclusion

Digital disparity remains one of the most significant barriers to AI's transformative potential in African education. AI technologies depend on consistent electricity, internet connectivity, devices, and user competency prerequisites that remain unevenly distributed across regions and socioeconomic groups. Where these foundations are absent, AI deepens existing educational inequities rather than redressing them. For learners with disabilities and neurodivergent learners, this is not merely a question of missed enrichment: AI-enabled assistive technologies often serve as the primary gateway to curriculum access. Infrastructure gaps, therefore, do not simply delay innovation; they risk entrenching the exclusion of those who depend most on technological mediation to learn (Mpu, 2023; Muchandiona et al., 2025).

The introduction of AI into African classrooms nonetheless represents a decisive and promising moment. Properly harnessed, AI can provide accessible learning materials, personalized supports, and assistive tools that move inclusive education from aspiration to daily reality. Pilot evidence from South Africa and Kenya demonstrates this potential. However, without intentional, equity-driven implementation, AI risks reinforcing the very divides it claims to close: concentrated in urban, well-resourced schools; designed for dominant languages and cultural contexts; reliant on proprietary systems vulnerable to bias; and sustained only through short-lived pilots that evaporate when external funding ends.

An inclusive AI future requires more than technological advancement; it requires a redistribution of power. Disability-led organizations, including those representing neurodivergent communities, must play central roles in setting priorities, guiding procurement, and monitoring implementation. Teachers require sustained, practice-based coaching not one-time workshops to integrate captioning, screen readers, text-to-speech, adaptive platforms, and accessible formats into everyday instruction. Education systems must prioritize open standards, offline-first tools, and local-language models such as those developed by Masakhane, which lower costs, enhance relevance, and strengthen regional expertise. Data practices must be safe by design, with minimal data collection, robust child protection measures, and regular bias audits.

Scaling inclusive AI requires a pragmatic, sequenced approach: beginning where exclusion is greatest, investing in the entire ecosystem rather than isolated pilots, tying professional development to recognized credentials and classroom coaching, and building a transparent evidence spine of public metrics to track what works. Long-term planning for maintenance, replacement, and community ownership must precede system-wide rollout.

Ultimately, this is both a moral and an educational imperative. AI must bridge, not widen, the gap between learners and learning. If the stakeholders identified throughout this paper, ministries, universities, teacher colleges, disability movements, technology developers, and funders act collaboratively, Africa can pioneer a model of inclusive, locally grounded, and ethically governed AI that benefits every child. The choice is clear and urgent: invest now in equity, localization, participation, and safeguards, or allow the digital divide to harden into a permanent learning divide. For children with disabilities and neurodivergent learners, AI is not merely a tool for personalization but often a prerequisite for access. Screen readers, captioning systems, translation tools, and adaptive platforms can determine whether a learner participates at all. Consequently, infrastructure gaps do not simply delay innovation; they risk entrenching exclusion for those who depend most on technological mediation to access learning (Mpu, 2023; Muchandiona et al., 2025). The time to act and to deliver is now.

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NeuroControverse

Dyslexia and Dehumanisation in the Age of AI

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> In the era of artificial intelligence, when human dignity is threatened by new forms of dehumanization, ours is the pressing duty to remain profoundly human. We must lovingly safeguard the grandeur of humanity bestowed upon us and revealed in its fullness in Christ, the splendor of which no machine can ever replace [...] The risk of dehumanization — of building a future that excludes God and reduces the other to a means — is an ancient and ever-new temptation that today takes on a technical guise.
>
> (Leo XIV, 2026, paragraphs 15, 10)

There has been much discussion on AI's capacity for moral agency (see Brożek & Janik, 2019), epistemic capacity (see Van der Maas, Snoek, & Stevenson, 2021), and emotional experiences (Li et al., 2025). In fact, there has been much discussion on AI's capacity for a lot of things. What there has been less discussion on, however, is not so much how far AI is "becoming human", but how much it might actually dehumanise the humans.

First of all, we would wish to ask what we mean when we talk about AI. Then we should ask what it is we mean when we talk about dehumanisation. And finally we might ask which particular humans could be dehumanised by AI. With these questions, taken together, we can give ourselves a good chance of discovering whether "AI dehumanises (some) humans".

As to the first question, we may say initially that many popular AI systems are based on machine learning and deep neural network models trained on large datasets to generate text, images, and other outputs (Goodfellow et al., 2014). The term AI is commonly used to describe the capability of non-human machines, programs, or artificial entities to solve tasks, communicate, interact, and act logically in ways associated with human cognition, distinguished by the dimensions of performance and autonomy (Gil de Zúñiga, Goyanes, & Durotoye, 2024), which includes software such as advanced web search engines, natural language systems, generative tools, recommendation platforms, and technologies used for intellectual tasks like ideation, outlining, synthesis, language enhancement, and support in what we might broadly think of as "intellectual work" (Raitskaya & Tikhonova, 2025). In its most recent iterations, AI has come to refer to a family of computational systems, especially generative and agentic systems, capable of task-specific reasoning, language, prediction, interaction, and action with varying degrees of autonomy (Sapkota, Roumeliotis, & Karkee, 2025). Taken together, these definitional aspects suggest that contemporary AI is best understood not as a single technology, but as a multifaceted and evolving category of computational systems designed to replicate, support, or extend aspects of human cognition and decision-making. Increasingly, AI also implies systems capable of adaptive and semi-autonomous behaviour within specific domains and contexts, which may one day move from "semi-autonomous" to "fully autonomous". It is these systems that we are focusing on when we discuss "whether AI dehumanises certain people".

The second question, which asks about dehumanisation, is slightly less straightforward because it is slightly more diffuse. One approach to understanding dehumanisation which is useful to take is to investigate *what it is to be human*, and work backwards from there. If [possessing characteristic x] is seen as key to being human, or to having humanness attributed to a subject, then [not possessing characteristic x] would be seen as lacking that key characteristic of being human, or having humanness attributed, and so having one's humanness in some way weakened. As we will see, much of the literature on what it is to be human focuses on three major areas: cognition, emotion, and morality, and investigating dehumanisation would therefore begin strongly by examining these ideas. It's to this that we now turn.

First, cognition. Jack, Dawson, and Norr (2013) argue that traits which are seen as uniquely human include rationality, intelligence, and what we might broadly call higher cognition, supporting the idea that cognitive competence, understanding, and even interpretive ability are central to how people are socially recognised as fully human. Losing these, or losing the ascription of these characteristics, would be on this reading tantamount to losing the ascription of humanness.

Perhaps better known in public discourse is Fricker's (2007) work, where she treats epistemic agency – the capacity to know, interpret, and contribute meaningfully to shared understanding – as a core dimension of personhood. Rational communication and knowledge-having / knowledge-sharing are treated on this view as central human social capacities, and epistemic exclusion becomes existentially excluding. She argues that humans are, among other things, social interpreters, reason-givers, meaning-makers, and participants in shared epistemic practices. When someone is persistently disbelieved, ignored, or denied interpretive resources, they are reduced.

Groups historically subjected to this "reduction" are typically seen as irrational, unreliable, overly emotional, cognitively inferior, incapable of objective knowledge, or even childlike. In this sense, the epistemic reduction can function as both a partial denial of rational personhood, and (one might say, therefore) a partial denial of full humanness. Furthermore, those who are reduced are often excluded from contributing to the creation of knowledge and social norms. This process can demote individuals from being viewed as active "subjects" to being treated as "objects," effectively distancing them from the social group and from the creation of social concepts which directly affect them.

According to this view, the perceived reduction in a person's epistemic agency becomes a perceived reduction in that person's humanity.

When turning to the relationships between emotions and ascriptions of humanness, Cortes (2005), Haslam (2006, 2007), and Leyens (2001) both individually and collectively contribute significant works in one of the major traditions in dehumanisation research. This is the idea that people infer *humanness*, at least in part, through the attribution of certain kinds of emotions. They argue that denying emotions to others is not merely alienating and othering, it's a subtle denial of full humanity.

Leyens argues that people subtly perceive out-groups as "less human" than their own group, and that denying emotional states is one of the more objectifying ways that they can do this. Some emotions (which Leyens calls "secondary emotions") are seen as markers of humanness, and withholding the ascription of these implies diminishing the humanity of those they are withheld from. Indeed, attributing particular types emotions more readily to their in-group than to out-groups is attributing particular types of humanness to their in-groups and denying them to the out-groups. Humanness is viewed as the state of possessing an emotionally complex inner life.

Haslam agrees, noting that the possession of complex emotional states is one of the key factors used to distinguish humans from animals. Without these complex emotional states, people are seen as less human, and more animalistic. Traits considered essential to being "truly human" include emotional warmth, interpersonal responsiveness, and emotional depth. Lacking such traits would make someone less than truly human.

Cortes meanwhile argues that the attribution of emotions works as a marker of perceived humanity, and reinforces the idea that the "secondary emotions" of Leyens, rather than simply the familiarity that might accompany in-group belonging, operate socially as indicators of full human status. This works to shield Leyens from the criticism that humanness is attributed on the basis of closeness, rather than the basis of emotions. Humanness on this view is genuinely linked to emotions, rather than to how well one is known.

A person, in other words, is seen as "fully human" when she has emotional depth and complexity, and less than fully human when this depth and complexity is removed.

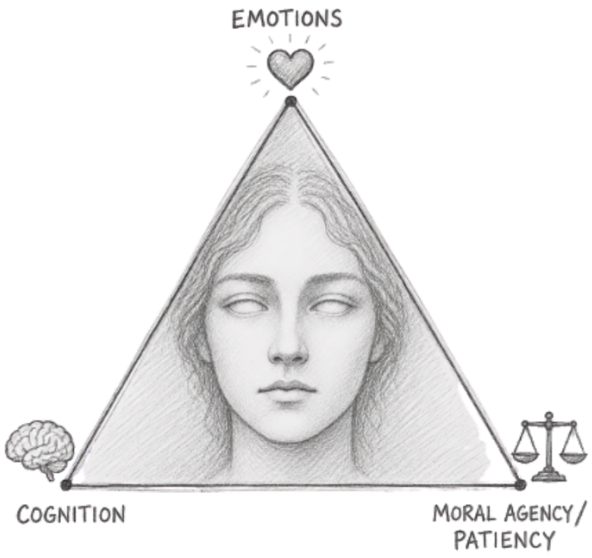
Thirdly, there is the issue of the moral dimension of humanness. In short, we are seen as more or less human when we have moral agency and moral patiency – the ability to do moral harms and the ability to have moral harms done to us – ascribed to us in different degrees. So much of the literature on being human is taken up with just this issue.

Contemporary dehumanisation theory increasingly treats moral standing as central to what people perceive as "fully human." Gray (2007) and Gray (2012) each explore this in some detail. Each argues to some extent that moral judgment depends on a perceived capacity, not only to act, but to feel. Humanness is attributed through the perception of intentional agency, emotions, and morality. Meanwhile, Bastian *et al* (2011) argues that being human crucially implies a particular moral status, that of having moral value, moral agency, and moral responsibility. In other words, being both a moral patient and a moral agent. Being human implies the capacity for intentional moral action, and the capacity to be morally harmed.

For Bastian and others, dehumanisation occurs when people are not seen as morally accountable agents, or when they are seen as less so; or when they are seen as less morally valuable beings deserving of care and protection.

Collectively, we see that the attribution of humanness is often grounded on three partly distinct yet overlapping attributes: cognitive and intellectual capacity, emotions, and moral agency / moral patiency. Malle (2019) argues that mind perception can be factored through three major axes: reality interaction and agency, affect and emotion, and moral cognition. He explicitly groups cognition, emotion, and morality as the dominant dimensions of a perceived mind, including planning, understanding, social reasoning, emoting, and moral judgement. It's not that humans *often* have moral agency or patiency – it's that these are psychologically central to what people mean by "human." Lacking any one of these would reduce a subject to a lesser perception of humanity.

For Malle, each of the three pillars – cognition, emotion, and morality – is essential for humanness to be fully assigned. It is less of a choice about which one is essential to a perception of being fully human; it is that they are, together, what constitutes the idea of being fully human.



Finally, as to the question of which particular humans could be dehumanised by AI, there may be multiple at-risk groups whose humanity is questioned or even actively undermined by the growth of AI models. One which we can identify, but which has hitherto received little attention in the academic literature, is people with dyslexia.

In one study, Lemke, Bloomfield, and Herfurth (2026) found that dyslexics are represented by some AI models (based on the data that most AI models utilise) as displaying a lack of knowledge and competence. Dyslexic professionals, it was discovered, are seen as epistemically diminished: less competent as knowers, less intellectually authoritative, and less suited to cognitively demanding tasks and professions.

In arguing that AI systematically misrepresents neurominority (specifically dyslexic) professionals, Lemke *et al* make the case that machines which systematically frame dyslexic cognition through deficit-oriented lenses are at one and the same time framing dyslexic cognition as less developed, less competent, or less worthy for real-world tasks. Organisation, reliability, communication, and professional suitability are questioned. Dyslexics are epistemically diminished.

In this way, dyslexics – in the view of the AI systems which represent them – are assigned a reduction in epistemic agency. The first of the three pillars of dehumanisation.

Furthermore, this same research discovered a diffusion of emotional density in how AI represents dyslexic professionals. Briefly put, we can define emotional density as the strength and clarity of a relevant emotion shown by a given generated image. To put it in metaphorical terms, it is about *how brightly the emotion shines through*. If an image is generated and purports to show happiness, then an "emotionally dense" image will show this happiness in ways that are measurably stronger than in a more "emotionally diffuse" counterpart.

The research worked by asking AI to generate images of professionals of differing social and economic strata, where some of these images were of dyslexic professionals and some were of non-dyslexic professionals. It then measured levels of happiness, confusion, sadness, and other such reactions, finding that dyslexic professionals were consistently depicted with more emotionally muted or emotionally attenuated expressions than their non-dyslexic counterparts, suggesting a relative reduction in perceived emotional intensity and affective

depth. Images of neurotypical professionals persistently displayed stronger correlations between the distribution of emotional expressions and the corresponding occupational profiles. It is this emotional mutedness that we can call diffused emotional density.

As we have argued that a person is seen as "fully human" when she has emotional depth and complexity, and less than fully human when this depth and complexity is removed, we can conclude that dyslexics, as represented by AI, and being shown with diminished emotional depth and complexity relative to non-dyslexics, are characterised by AI as less than fully human. This is the second of the three pillars of dehumanisation.

As it stands, there is (in this author's view) disappointingly little research on the way AI considers different groups – including those with dyslexia – to be more or less moral agents and patients. I would argue that future research focusing on the issue of how far AI positions dyslexics as less morally agentic than non-dyslexics, and at the same time less endowed with moral patiency, will elicit results demonstrating a moral diminution in how dyslexics are perceived. This moral diminution, if true, will certainly be factored into systems powered by AI, including systems responsible for education, for hiring, for company promotions, for medical decisions, for military decisions, for self-driving cars, for insurance models, and for so much besides (Lemke, Bloomfield, & Herfurth, 2024). And as soon as this becomes a reality, we will be able to detect a measurable decrease in the educational, professional, and social outcomes of dyslexic individuals.

Regardless, following Malle, we see that already, dyslexics are being shown by AI to instantiate deficits in two of the three pillars of humanness – cognition and emotion. If Malle is correct, and the loss of *any* of the three dimensions of humanness results in the lessening of humanness overall, then the loss of two of these dimensions would certainly constitute a lessening of humanness.

The inescapable conclusion is that dyslexics – in the way that AI systems represent them – are apportioned less humanity than non-dyslexics: they are represented as less competent knowers, and less emotionally endowed.

We have created a paradox: while we as a society appear to imbue, more and more, AI with characteristics associated with personhood (Kim & Im, 2023), the AI itself seems to be doing the opposite: it is removing characteristics associated with personhood from groups who are already potentially vulnerable. To build upon what Pope Leo XIV said, it is more than human dignity which is threatened by new forms of dehumanisation – it is the very concepts of belonging, inclusion, moral worth, and humanness itself which is under threat.

The risk is not simply a general loss of human dignity, although that is certainly an area of concern we must not ignore. The specific danger here is that as AI is conferred more and more with humanity, the humanity it removes, at the same time, from vulnerable groups of people will cause irreparable and irreversible existential harm. The dehumanisation that reduces the other to a means rather than a moral end is indeed an ancient and ever-new temptation that today takes on a technical, yet somehow recognisably human, guise.

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NeuroconVerse

Kim Percy, Calling Shame (2023) [A]

Shame

I watched you just the other day
silent, as a thought inhaled,
and as you promised, heard you stay

as silent as a love curtailed.
and in the clearness of dismay
I watched you fading into grey.

and in the things that we convey
I watched the echoes of the day,
silent as the colours paled.

and as your eyes refused to stray
you watched my ego fall away,
a silence as my pride exhaled

and watched me as I went astray –
this silence that my loss entailed.
and in the space of this display

and as the silences prevailed
and as I stood in disarray
I watched you as you walked away
silent as my words all failed.

"Formidable Milton" {pseudonym} (2026)

[A] This piece is available for purchase at https://www.radiusart.com.au/art-store/p/calling-shame. NeuroConverse® has no commercial relationship with the artist and receives no benefit from any sale.

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