# Safe, ethical and equitable use of artificial intelligence: policy and regulatory implications for South African basic education

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**August 2026**

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[3] Our appreciation goes to Alex McCall from Caveat Legal in collaboration with Human Studios for substantive comments and contributions to this paper.

# Executive summary

The South African education system is not unique in being impacted by the accelerated uptake of artificial intelligence solutions, with large language model-based chatbots at the vanguard of this current wave (Cross & Feldman, 2025; UNESCO, 2026). The country is however very different from many of its peers across the globe and, one may argue, even on the African continent. Two characteristics of the rainbow nation stand out when considering the use of AI in schools. First, the public education system is deeply unequal in its capacity to provide access to quality education (Spaull, 2013), with specific concerns about deeply historical variances in teacher quality and infrastructural deficiencies (Saal et al., 2025). This weakness makes the system particularly vulnerable to accepting the quick fix solutions that commercially driven AI vendors promise, mostly without empirical evidence of impact on learning outcomes and lacking contextual adaptations to the South African curriculum.

The second feature within the South African context is that dedicated AI policy and regulations, more so in education, are at best only at early stages of development and far from ready to provide much needed guardrails (DCDT, 2026; Leipsig, 2024; UNESCO, 2023). This risk is compounded by the rapid shifts in AI capabilities that are outpacing the capacity to govern them. The combination of a need for solutions, without guardrails in place, puts the education system at risk, particularly in terms of the safety of learners, the impact on teachers (UNESCO, 2026; UNICEF, 2021), the ethical use of AI, and the deepening of inequality as AI implementation becomes directly dependent on affordability and the preservation of education as a public good. In this contribution, we unpack both these characteristics and their compounded impact on the education system, as we offer insights, areas of consensus and contestation as well as opportunities and implications for the South African basic education system.

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# Introduction

> The best strategy for bending the digital disruption in the direction of supporting education as a common good is to ensure its democratization within a robust public sphere (UNESCO 2021a, 111).

Driven by generative artificial intelligence (AI), the rapid digital transformation experienced globally since the pandemic has shifted in recent years, becoming even more profound and disrupting the very foundational architectures of education (Balaji et al., 2025). The South African basic education system is experiencing the impact of AI in very visible ways.

AI is defined by UNESCO (2021a, 3) as

> AI systems are information-processing technologies that integrate models and algorithms that produce a capacity to learn and to perform cognitive tasks leading to outcomes such as prediction and decision-making in material and virtual environments.

AI in education, also referred to as AIEd, includes the creation and automation of synthetic content that makes learning more interactive for learners, as well as the development of platforms and dashboards that are able to collect and analyse complex queries at scale, and provide guidance to educators in real time in conversation responses (Cross & Feldman, 2025, Isaacs, 2024). It would be fair to say that definitions, such as the one listed above, are rapidly becoming outdated, being based on previous generations of generative AI. What is now emerging is the increased scale and pace of free tier AI uptake by students and teachers, independent of and outside of government capacity to govern; in addition, frontier AI models are increasingly capable and general purpose. These developments increase the risks of policy fragmentation and deepened education inequalities (OECD, 2024b; UK Department for Science, Innovation and Technology, 2023; UNESCO, 2023a).

In South Africa, AIEd is increasingly being adopted in both public and private schools, based on the promise of achieving better learner outcomes and improving teacher pedagogies in a context where the country ranks incredibly low against its peers (International Association for the Evaluation of Educational Achievement, 2023). The adoption is driven by individual, private choices made by millions of children and teachers outside of government, institutions and parental/guardian control; by institutional and system programmes that promote the adoption of AI; and by the powerful global commercial technology vendor machinery that drives uptake at both levels (UN General Assembly, 2024). AI is also impacting the education system in more subtle, if not purposely hidden and undemocratic, ways (UNESCO 2021a). These may include using AI to detect harmful content, misinformation and the uncritical adoption of Global North programmes and, more worryingly, the commercial use of large datasets from public databases or platforms without the commercial use of large datasets from public databases or platforms without an adequate lawful basis, transparency or appropriate safeguards, contrary to the Protection of Personal Information Act 4 of 2013 (POPI) Act. Offered and implemented without direct cost under the guise of public good, such AI-based systems

are able to collect sensitive and wide-ranging datasets. The data is used to train and improve proprietary AI models, transferring the resulting capabilities to other applications (Saal et al., 2025).

The adoption of AIEd  in basic education takes place in a specific national context where the country is grappling overall with the opportunities and challenges presented by AI, and specifically, the inequality of access to devices, connectivity and "pay to use" content. The draft *South African National AI Policy* (DCDT, 2026) is a case in point, ironically also because references in the draft policy were found to be fabricated by AI (Reuters, 2026). At this time, the Department of Basic Education (DBE) is also in the process of finalising its *Digital Education Transformation Strategy* (2026–2030) (DBE, 2026; Keevy et al., 2026), arguing strongly for the responsible use of digital technologies, AI ethics, and algorithmic accountability. The key pillars of a proposed *Basic Education AI Ethics Framework* are worth listing in detail (DBE, 2026, 37):

- Human-in-the-Loop Mandate: AI shall augment, not replace, the professional judgment of educators. No high-stakes decision (e.g., student progression or teacher performance ratings) shall be made by an autonomous system without human oversight.
- Algorithmic Transparency and Bias Mitigation: To prevent the "digital reinforcement" of historical inequalities, Basic Education AI models shall be audited for racial, gender, and linguistic bias.
  Training data shall be representative of the South African context, including all 11 official languages.
- Data Privacy and "Learner-centric" Design: In compliance with POPIA, learner data used to train AI models shall be de-identified. AI tools designed for classrooms shall prioritise child safety and prevent "filter bubbles" that limit a learner's exposure to diverse perspectives.
- IP and Academic Integrity: Clear guidelines will be provided on the ethical use of Generative AI in assessments, balancing the need for AI literacy with the protection of original thought and academic honesty.

In this contribution to the AI in South African Basic Education Rapid Response Series, as a pre-policy national initiative, we present a critical review of the current state-of-play, focusing specifically on the safety and ethical and equitable use of AI in basic education in South Africa.

## Research design

In this paper, we adopt a critical policy analysis approach to examine the use of AI in South African basic education in mid-2026 (Ball, 1990; Bowe et al., 1992; Czerniewicz & Feldman, 2024). The authors both work extensively in the national, continental and global education and training policy domain (Isaacs, 2022; Isaacs 2024; Keevy et al., 2026), and so we have drawn on these experiences to provide our views on the policy and regulatory implications for the South African basic education system. Our research process included an analysis of documents and a review of literature, including grey literature and unpublished articles, as well as a small set of key informant interviews. Our paper is intended to read as a rapid response input, rather than a more comprehensive research report. The article comprises a summary of the literature review, followed by a set of research findings, discussion and implications for the South African basic education context and a final concluding section.

# Literature review

In this section, we provide a synthesis of local and international literature on the topic of AI in basic education through the application of a critical policy analysis lens. Our main focus is to hold the tension between two themes we have identified: (1) the deep inequality in South African education that makes the system susceptible to the adoption of untested AI-powered solutions; and (2) the emerging policy framework to govern AI nationally, specifically in the educational context.

## System susceptibility

South Africa remains one of the most unequal education systems in the world, characterised by profound disparities in school resources, teacher knowledge, infrastructure and learner achievement (Spaull & Jansen 2019; Taylor 2019). Rather than functioning as a single coherent system, South African schooling has frequently been described as comprising two distinct education systems that produce markedly different educational opportunities and outcomes (Muyambi et al., 2025; Spaull, 2013). These inequalities are reflected in international assessments, where the majority of South African learners continue to perform well below expected proficiency levels, and have remained a defining feature of the national landscape since democracy in 1994 despite ongoing attempts to address them. Importantly, there has been a significant growth in low-fee private schooling since 1994 (CDE, 2013). This growth has not been confined to elite schools, with low-fee independent schools showing considerable growth in urban and peri-urban areas. Independent schools now account for around 10% of all schools, compared with approximately 3–4% two decades ago (DBE 2025b; Languille, 2016).

In public schools, connectivity improved from 48% in 2014 to approximately 80% of schools in 2022, but with the vast majority of schools having connectivity confined to the school admin block, resulting in limited access or opportunity for adopting EdTech in the classroom (DBE 2025a). The quality and educational use of the connectivity vary considerably (Fisher et al., 2017). At this point, there is no comprehensive national data on the adoption of AI in South Africa, although there is growing evidence that generative AI tools are increasingly being used by teachers and learners across the world (Cross & Feldman, 2025; National Literacy Trust, 2024; OECD 2023; UNESCO, 2023b;). In addition to AI tools with broader applicability, such as ChatGPT, Google Gemini for Education and Microsoft Copilot, more specific commercial EdTech applications used in South Africa include MagicSchool AI in the Western Cape Education Department's SuperTeacher Toolkit (Western Cape Education Department, n.d.), Eduten, a Finnish AI-powered mathematics learning platform developed at the University of Turku (Gibbs, 2025) and Mindspark, an AI-powered adaptive learning platform developed by the Indian company Educational Initiatives (Ei) (Muralidharan et al., 2019), both adapted for use in South African schools, and also the South African-developed Green Shoots' Maths Curriculum Online (Le Roux, 2025). Work commissioned by the Zenex Foundation (2025) focusing on mitigating learning backlogs using education technology in Grade 4 mathematics and language, which is yet to be completed, will be important to keep an eye on as one of the first evidence-based studies of this nature. An external evaluation of the rollout of Mindspark between 2022 and 2024 is also underway (Ukufunda, 2026).

If we are to sustain education as a common good (by focusing on safe, ethical, equitable design and use of AI) then we need targeted, deliberative governance and the building of our capacity to do this. We can achieve the deliberative governance of AI provided our efforts are based on participatory governance, which includes the students and teachers who are cultivating their AI competencies/capabilities. The inclusion of students and teachers in the governance of AIEd may well be the main argument of the paper – which brings us to the need to invest in student and teacher AI competencies, both of which include cultivating agency and a foundational grasp of ethics.

When considering the susceptibility of the South African education system to untested AI solutions, it is useful to turn to the courts. Internationally, the 2025 class action lawsuit against Instructure (through the Canvas LMS platform) is important. The claim is that Instructure collected personal learner data, violating federal and state laws in the United States. In the European context, the collection of biometric data from students in France was found to be unlawful (European Digital Education Hub, 2023). A brief desktop search in a selection of countries (e.g. in Kenya, Malaysia and Canada) confirms the trend towards emerging frameworks to govern AI in education, with few at more advanced stages. At the time this contribution was being prepared, no reported judgments could be found in South Africa.

Shadow AI, which refers to individual adoption of AI by employees without organisational or departmental approval, is a key factor to consider. Some obvious examples are teachers using AI for lesson preparation, teachers uploading learner work, learners using AI to complete assignments, AI transcripts of meetings, using AI to mark scripts, and even the purchase of AI solutions by schools without district or provincial approval (Saal et al., 2025; UNESCO, 2023a). Shadow AI will likely emerge quicker in more privileged schools with better access to resources and stable connectivity. Shadow AI also provides an attractive alternative to teachers who lack the necessary competence and professionalism required at their level of appointment. Pre-service teacher training is gradually adapting to deal with the integration of AI in teaching and learning, with significant levels of subjectivity and low levels of behavioural intention to adopt AI (Jere et al., 2024; Mnguni 2024 ). The use of shadow AI can be reduced through adopting a more standardised, regulated approach accompanied by training for in-service teachers and school management.

## Existing policy frameworks to manage AI adoption

The current policy framework governing AI in schools in South Africa is fragmented and lacking in specifics. At the national level, the previously mentioned draft *National AI Policy Framework* (DCDT, 2026) is still under development. The draft policy explicitly refers to and prioritises the integration of AI into education, while also listing education as the first critical sector for AI implementation. The draft policy is also clear on the need to bridge and reduce the "persistent digital divide" (DCDT, 2026,18) as crucial for AI adoption, even proposing that "community-based AI education centres must be established to promote accessibility" (DCDT, 2026, 41). The piloting of individual learning platforms is also noted as a strategic building block to "facilitate alignment of value creation within the government ministries" (DCDT, 2026, 75). The POPI Act of 2013 POPIA provides an established framework for the lawful processing of personal information, including accountability, transparency and security obligations, additional protections for children's personal information, and rules governing automated decision-making and cross-border transfers. Also at a national level, the South

African Schools Act of 1996, recently revised through the Basic Education Laws Amendment Act 32 of 2024, provides guidance on learner rights and school-level policies; as does the Children's Act of 2005 as amended in 2025; and at the highest level, the constitutional rights, including privacy, equality, the best interests of the child and basic education, are secured in South Africa's 1996 Constitution. The Cybercrimes Act 19 of 2020 is also relevant insofar as it criminalises conduct such as unlawful access to data or computer systems, unlawful interception, interference with data or systems, and cyber fraud, whether committed using AI or directed at AI systems

Internationally, there is a growing number of important resources that could be used as benchmarks in South Africa. UNESCO's (2023a) *Guidance for Generative AI in Education and Research* stands out, with comprehensive guidance on teacher support, assessment, data privacy and the age-appropriate use of generative AI. UNESCO's *AI Competency Framework for Teachers* and the accompanying one for students (UNESCO, 2024a, 2024b) provide further guidance for developing AI training curricula for initial teacher education and professional teacher development. While broader in their coverage, the OECD's *Digital Education Outlook 2023 and Economic Outlook 2026* (OECD, 2023, 2026) and updated *AI Principles* (OECD, 2024a) are also valuable. From the European perspective, there is the *Ethics Guidelines for Trustworthy AI* (European commission, 2019), and the *Framework Convention on Artificial Intelligence, Human Rights, Democracy and the Rule of Law* (Rotenberg, 2025). UNICEF (2021) has developed the important *Policy Guidance on AI for Children*, and the World Economic Forum (2024) published *Generation AI: Preparing Children for the Age of AI in 2024*.

The recently published *Preliminary Report of the Independent International Scientific Panel on AI* (UN, 2026) raises concerns of AI outpacing governance and safety mechanisms globally. Closer to home, the African Union's (2024) *Continental Artificial Intelligence Strategy* provides guidance on inclusive development and digital sovereignty. The soon-to-be-released *2026 Global Report on Teachers* (UNESCO, 2026a) notes the significant changes in and challenges for teaching and learning presented by the integration of AI, and specifically the need to discern where "AI substitutes the core competencies of teachers leading to deprofessionalization, and where it can amplify creativity and collaboration" (UNESCO, 2026, 10). What is lacking is the sharing of experiences within and across different countries (see Winthrop et al., 2026). Emerging organisations such as the EDSAFE AI Alliance in the United States and others that are trying to counter this by providing on the ground support and resources (Holmes et al., 2024).

The DBE's draft *Digital Education Transformation Strategy* (DBE, 2026) that will provide the main policy framework for managing AI adoption in basic education and the proposed *Basic Education AI Ethics Framework* mentioned earlier are important and hugely valuable as the main anchors for the work that will follow. The four pillars being proposed (Human-in-the-Loop; Algorithmic Transparency and Bias Mitigation; Data Privacy and "Learner-centric" Design; IP and Academic Integrity) resonate well with international trends (see Balaji et al., 2025) and set the stage for the more detailed work that will have to be done.

It is important to note that the notion of human-in-the-loop assumes conditions that do not always exist in Global South countries, since it shifts responsibility to individuals or institutions that may not have the capacity or training to take on this role. Meaningful human oversight requires more than placing a person in the loop, because that person must also have the competence, authority and institutional support to exercise context-sensitive judgment where legal, ethical or technical rules

cannot prescribe a single answer. At the moment school managers, teachers and parents in South Africa mostly have limited awareness of AI and, unless they are going to be capacitated and supported, this situation will limit government agencies' ability to control and monitor AI integration. A recent independent review of the draft Strategy (Keevy et al., 2026, 4) found that:

> The [Digital Education Transformation] Strategy is transformational in its evidence-based approach by addressing critical issues in a clear and explicit manner. Examples include the emphasis on teacher pedagogy, and a system where technology supports teaching and learning. Overall, the Strategy has the potential to deliver meaningful and measurable impact, but when considering capacity constraints in the system, both financial and human, the scalability of the strategy is weak.

# Key considerations for the adoption of AI in the South African basic education system

The literature review elaborated on the risk of deepening inequality through the unbridled adoption of AI (UNESCO, 2023a). In order to identify the implications for the South African basic education context, it is useful to refer to UNESCO's seminal report *Reimagining our futures together: A new social contract for education* (UNESCO 2021b). The report emphasises the risk of reproducing stereotypes, deepening exclusion and also deprofessionalisation (UNESCO, 2021b, 88):

> Some education systems have welcomed AI technologies as a way to enhance internal governance, efficiency, and public accountability. While there are gains in terms of knowledge and the visibility of educational processes, the growth of machine learning technologies risks fragmenting educational processes into 'data sets' and accelerating trends towards managerialism, surveillance and the de-professionalization of teachers. In particular, the use of facial recognition software and AI for monitoring of students and teachers by states who could use such resources for political surveillance is antithetical to Article 26 of the UN Declaration of Human Rights which affirms the goal of education as advancing fundamental freedoms and human rights.

At this point in our contribution, and having made the risks as clear as possible, we turn towards key considerations to guide the inevitable adoption of AI in the basic education system through the development of the appropriate policy and regulations. The regulatory gap does not necessarily call for a single AI statute, as a broad statute may date quickly and add compliance obligations without addressing the capacity constraints identified above. Regulation should instead target gaps in responsibility and review: who is answerable for AI-assisted decisions, whether consequential decisions can be explained and challenged, and whether human oversight is real, for example.

## Need for alignment with government-led digital public infrastructure

As mentioned, the DBE's draft *Digital Education Transformation Strategy* (DBE, 2026) is a keystone process, but there is one major weakness in the current draft: it does not align sufficiently with other government-led digital public infrastructure (DPI) strategies (Keevy et al., 2026). At this important and early juncture in South Africa's policy response to AI adoption in basic education, alignment is critical. An obvious gap is the interrelationship with the government-led MyMzansi initiative (https://www.mymzansi.gov.za/). MyMzansi is South Africa's unified digital government services initiative. Unveiled in 2025, MyMzansi is a citizen-facing digital public service that provides individuals with a single, trusted interface to view, access and use their personal records and entitlements held across government systems, including—but not limited to—learning and skills records. Policies and regulations for adopting AI in basic education stand to benefit from alignment with MyMzansi, helping to ensure that AI solutions adopted in basic education contribute to an integrated, secure and citizen-centred digital ecosystem rather than isolated, vendor-specific platforms. Specific examples include:

- reinforcing a learner-centred approach by giving learners and parents greater visibility and control over educational records and the use of personal data;
- strengthening privacy and data governance by supporting consistent approaches to identity management, consent, data sharing and compliance with POPIA;
- enabling trusted and interoperable digital services, allowing AI applications to access verified information through secure and authorised mechanisms rather than creating fragmented or duplicative data repositories; and
- supporting transparency and accountability by providing clear audit trails for the collection, sharing and use of learner data by AI-enabled systems.

The *UNESCO–UNICEF–ITU Charter for Public Digital Learning Platforms* adopted in March 2026, strongly supports this direction towards EdTech being integrated into country-specific DPI (UNESCO-UNICEF-ITU, 2026). A more direct engagement with the draft *South African National AI Policy* (DCDT, 2026) is also recommended. The DBE's Three Stream Model (TSM) (DBE, 2023), that aims to diversify learning pathways in the schooling system so that learners can pursue routes aligned with their interests, abilities and future careers, is also noticeably absent in the draft Strategy. Adding these missing links, from MyMzansi to the TSM, starts to point towards a pathway that travels all the way to the labour market. Having this "line of sight" between supply (schools, colleges and higher education institutions), to demand (employers and employment) is something not to be ignored in a country like South Africa with a youth unemployment rate of 46% (StatsSA, 2026).

## Opportunities that AI offers for teacher professional development

The forthcoming Global Report on Teachers (UNESCO, 2026) makes an important link between the adoption of AI and teacher professional development, particularly the fact that few countries have consistent system-wide approaches. The work of UNESCO (2024a; 2024b) in developing the AI competency frameworks for teachers and for students provides a good foundation for teacher professionalisation going forward. In South Africa, the South African Council for Educators (SACE) and the DBE will do well to get closer to these developments as the *Professional Teaching Standards* (SACE, 2018) as well as those for ECD practitioners (SACE, 2026) are operationalised. They should also be aware of the new guide for TVET institutions on integrating AI in TVET (UNESCO-UNEVOC,

2026). The work of SACE and the DBE will need to include the review of the *Professional Development Framework for Digital Learning* (DBE, 2018), a suggested framework on AI competencies for South African educators, and feeding into the current review of MRTEQ (Department of Higher Education and Training [DHET], 2015; 2026).

## Managing AI bias and resisting general bias

South African policymakers will need to deal with bias at two levels: the first level is bias in AI systems themselves, arising from data, representation, measurement, optimisation and deployment (Ferrer et al., 2021; Hofmann, 2025). In South Africa, these biases can result in privileging English over African languages and urban over rural experiences, deepening existing inequalities. Managing this form of bias will require ongoing monitoring and auditing, combined with the necessary safeguards that a national policy framework for AI in basic education will provide. The second level of bias operates more broadly inside the institutions and societies adopting these systems. Lonergan (1957) described several forms of such bias, two of which are directly relevant here: general bias, being a collective tendency for immediate, "common-sense" solutions over deeper understanding and longer time horizons; and group bias, the tendency of influential groups to favour arrangements that serve their own interests.

AI can intensify these pre-existing tendencies, as it accelerates decisions and can make inherited assumptions appear objective, while commercial vendors and better-resourced institutions shape what is adopted, and who benefits. Policymakers will be challenged to look beyond quick fixes to a wider horizon as they take on the accountability role for managing bias in a deeply unequal society. A practical response is to build moments of reflective inquiry into AI adoption. Here, policymakers and implementers take seriously the evidence and the actual experience of teachers and learners. They test assumptions and credible alternatives before scaling, and they assign responsibility for each decision and its review.

Regulation could make this discipline concrete. Before an institution approves, scales or materially changes an AI system, it could be required to test the evidence and its assumptions; hear those affected and consider credible alternatives; record its reasons, and keep the decision under review, with a workable route to reverse it. These requirements would make it harder for urgency or technological momentum to displace scrutiny and correction. A similar approach appears in the EU AI Act, which from December 2027 will require deployers of high-risk AI systems, including in education, to assess impacts before use and when the deployment context materially changes

## Opportunities for regional, continental and international collaborations

South Africa is well positioned to contribute to, and also learn from, a wide range of international developments relating to the adoption of AI in basic education systems. The work of UNESCO (2024a; 2024b; 2026a; 2026b) has already been mentioned.  On the African continent, the current collaboration between SACE, the Africa Federation of Teaching Regulatory Authorities (AFTRA) and the International Institute for Capacity Building in Africa (IICBA) is a good example. Another example is the work of the South African Qualifications Authority (SAQA), working with the African Union

Commission (AUC) and member states on the African Continental Qualifications Framework (ACQF) and its Qualifications and Credentials Platform (QCP). The work of the Commonwealth of Learning (COL) in the area of "frugal AI" (COL, n.d). and compacts like the *Gaborone to New Delhi Compact: Teacher-Led, Localised and Frugal AI for Equitable Education* (COL, 2026) are important to note. The DBE is encouraged to get more involved in such initiatives to ensure AI policy and regulatory processes in basic education are cognisant of professional, employment and qualifications dimensions.

# Conclusion

As we conclude, we return to the purpose of this paper. AI adoption in South African basic education will continue, with or without guardrails. High levels of shadow AI will inevitably deepen inequality, lead to increased levels of deprofessionalisation, and place vulnerable learners at risk (Lakhno, 2026). Overly technicist and narrow AI policy and regulations that are developed without sufficient alignment with government-led digital public infrastructure initiatives risk the basic education system becoming isolated. There is a huge opportunity for South Africa to learn from and contribute to global developments which are grappling with the same issues. The DBE's draft *Digital Education Transformation Strategy* (DBE, 2026) is well-positioned to be the keystone for what lies ahead. Working closely with the DHET, SACE and SAQA and other national stakeholders is also important. In general, South Africa has a reputation for drafting good policies, but failing dismally at their implementation (World Bank, 2022). South Africa needs to urgently address this profound lack of institutional and system capacity to govern AIEd at all levels. Applying the same discipline of reflective inquiry described above, implementation must therefore be understood as an iterative process of evidence-gathering, participation, reason-giving and revision, rather than a once-off adoption of a fixed policy framework. This focus on strengthening system capacity should further be carefully balanced with developing a living, responsive policy environment, including the development of an evidence base on AIEd for South Africa as identified at the Basic Education Sector Lekgotla held from 27 February to 1 March 2025. Let us proceed with a strong and clear focus on developing an implementable AI policy architecture for safe, ethical and equitable use of artificial intelligence in the South African basic education system.

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