

A stylized, low-poly world map in shades of blue, serving as a background for the top section of the cover.

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AI in African education: Between profit and the public good

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In this paper, we explore how artificial intelligence (AI) is reshaping education in Africa, with a focus on secondary schools, and technical and vocational education and training (TVET). Policymakers and educators are increasingly exploring how AI in education (AIED) can strengthen access and quality of education, and the private sector is developing solutions that respond to local contexts and languages.

AIED offers many opportunities, with applications ranging from personalised and adaptive learning to translation, inclusive tools for learners with disabilities and tools for remote learning. At the same time, significant barriers risk slowing progress. Weak digital infrastructure, limited connectivity and the high cost of hardware constrain access in many regions. Concerns over data privacy, child protection and bias highlight the need for robust governance. There are also tensions between private sector innovation, often driven by commercial incentives, and public sector objectives of equity and inclusion.

This paper examines these dynamics and sets out recommendations for African and European policymakers. For Africa, priorities include building digital competencies among teachers and learners, enacting national AI and data strategies, investing in local innovation ecosystems and closing the hardware and connectivity gap. For Europe, the challenge is to develop a coherent approach to AIED in external action, back it with sufficient funding and invest in Africa-centric solutions and responsible AI governance.

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Acronyms

ACHPR	African Commission on Human and Peoples' Rights
AI	Artificial Intelligence
AI4D	Artificial Intelligence for Development
AIED	Artificial Intelligence in Education
ARTUZ	Amalgamated Rural Teachers Union of Zimbabwe
AU	African Union
AUDA-NEPAD	African Union Development Agency
CBC	Competence-Based Curriculum
CESA	Continental Education Strategy for Africa
COM	Communication from the European Commission
DAP	Digital Access Programme (UK)
DES	Digital Education Strategy
DIRECCT	Digitising Health, Education and Business to Provide a Shield from Shocks
DSA	Digital Services Act (EU)
DTS	Digital Transformation Strategy
D4D Hub	Digital for Development Hub
EdTech	Education Technology
ENABEL	Belgian Development Agency
ESTDEV	Estonian Centre for International Development
EU	European Union
GDPR	General Data Protection Regulation
GG	Global Gateway
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPE KIX	Global Partnership for Education Knowledge and Innovation Exchange
ICT	Information and Communications Technology
IDRC	International Development Research Centre
IIEP	UNESCO International Institute for Educational Planning
ILO	International Labour Organisation
iSTEAM	Innovation, Science, Technology, Engineering, Art and Mathematics
ITU	International Telecommunication Union
LDCs	Least Developed Countries

LLM	Large Language Model
LMICs	Low- and Middle-Income Countries
NAPTOSA	National Professional Teachers' Organisation of South Africa
PTUZ	Progressive Teacher's Union of Zimbabwe
RTIA	Regional Teachers Initiative for Africa
SADTU	South African Democratic Teachers Union
SADC	Southern African Development Community
SASU	Southern African Students Union
SDG	Sustainable Development Goal
SEA	Skills for Education and Employability
SRHR	Sexual and Reproductive Health and Rights
STEM	Science, Technology, Engineering and Mathematics
TVET	Technical and Vocational Education and Training
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
WB	World Bank
ZIMTA	Zimbabwe Teachers Association

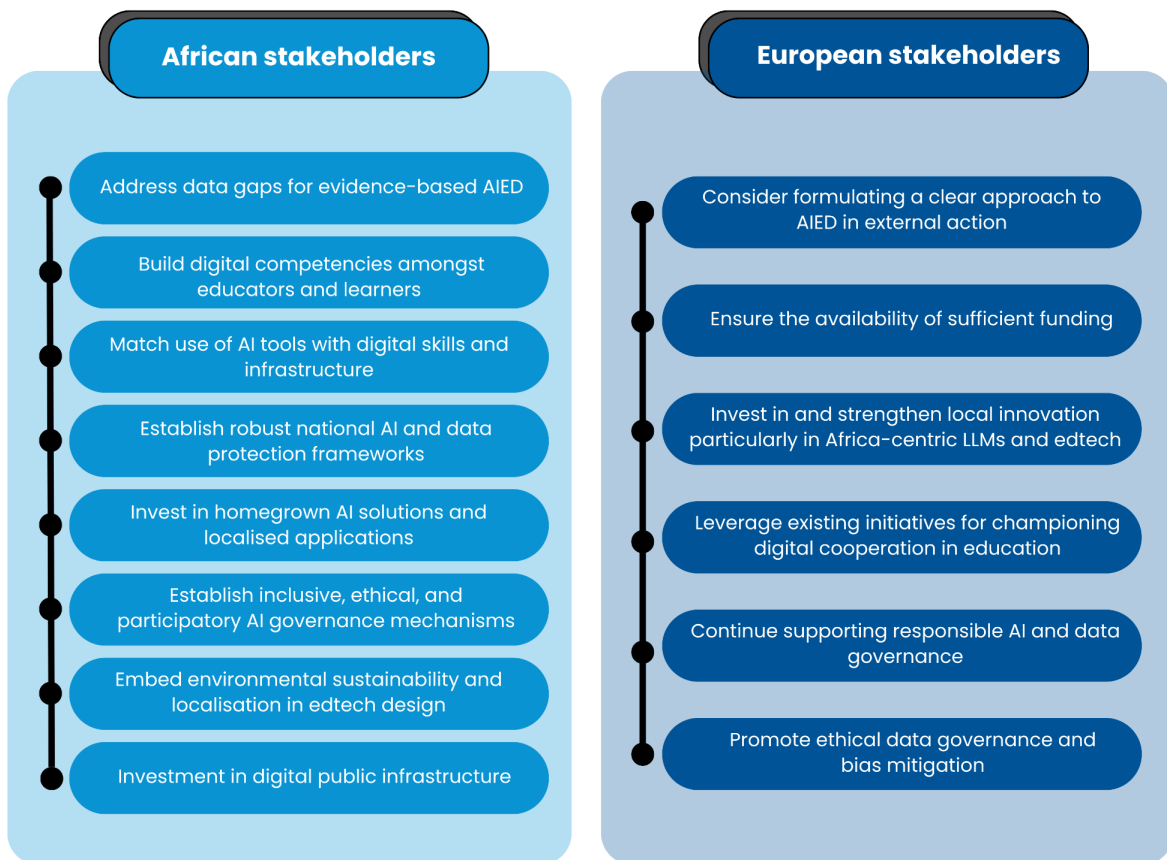
Executive summary

AI in education (AIED) holds significant promise for Africa, offering solutions to improve access and quality of education. Our use cases illustrate how AI offers personalised learning and intelligent tutoring, adapting content to individual needs and patterns. AI can also facilitate new learning experiences, improve the use of local African languages, and assist learners with disabilities through speech-to-text and real-time translations. Furthermore, AI can enable remote learning during disruptions and help identify students at risk of dropping out by analysing performance data.

There is a growing body of research that indicates AI can improve academic achievement. However, these opportunities are tempered by significant challenges. Privacy and security are major concerns, as AIED tools collect vast amounts of sensitive personal data from minors. AI systems developed in the Global North can inherit and amplify biases, reproducing historical inequalities. Finally, AIED risks deepening existing structural inequalities due to poor digital infrastructure, limited internet access, unreliable energy, and a significant hardware gap in many African regions, especially rural areas.

The AIED ecosystem in Africa involves a dynamic interplay of various actors, often revealing a tension between private interests and the public good in education. The private sector is a key innovator and driver of EdTech growth in Africa, with multinationals and local companies developing tools and actively partnering with governments and international bodies. Their interests, however, are often profit-driven. The heavy private sector involvement raises questions about who sets the rules: governments need to balance between their role as regulators and need to foster innovation, learner and teacher groups push for equity and protection, and international donors can help align markets with public policy objectives. African governments play a central role as regulators, funders, and policymakers, investing in infrastructure and digital skills, and striving to balance fostering innovation with ensuring ethical deployment. International actors are increasingly engaged, driven by developmental goals, normative interests, and geopolitical considerations. This study also provides the following recommendations:

Figure 1: Recommendations for African and European stakeholders



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Introduction

Africa's digital transition is advancing rapidly, with education as a key sector of innovation. The COVID-19 pandemic accelerated this shift, pushing widespread adoption of digital tools and remote learning across the continent, especially in primary and secondary education (Mastercard Foundation 2020). Digital transformation in education is evident across multiple domains: remote learning, curriculum reform, and teacher training for digital and AI skills. Yet opportunities are tempered by significant risks and inequalities. In much of Sub-Saharan Africa, digital devices remain rare in classrooms and internet access for students and teachers is highly uneven, particularly along urban–rural lines. Further, the use of AI in classrooms has brought concerns over data privacy and algorithmic bias.

This paper examines the intersection of AI and education in Africa, with a focus on secondary schools and Technical and Vocational Education and Training (TVET) programmes. These levels are critical as they prepare young people for further study, the labour market, and civic participation. Secondary education builds analytical and problem-solving skills vital for economic and social development, while TVET equips young people with practical skills for employment. Both serve as pathways for Africa's youth to enter and contribute to the workforce and society as a whole. The report does not focus on universities because this is a more widely researched area. Moreover, universities have more research and development capacities to experiment with their AI solutions compared to secondary schools and TVET colleges in Africa.

This paper explores some of the opportunities and challenges posed by AI tools in education and TVET; explores the interests of private, public, and international actors shaping Africa's AI ecosystem. It then argues that the right balance will need to be found between regulation and innovation so as to ensure that AI tools in secondary and TVET are truly improving education rather than primarily advancing profit.

1. Digital skills and AI in African education systems

Over the past years, both access and quality of secondary education have improved in most African countries. New school buildings, education subsidies and lower education and training costs have led to higher student enrolment numbers. Better teacher-student ratio leads to increasing quality of education. Furthermore, the number of qualified teachers has increased and there is a better availability of appropriate teaching and learning facilities, including for learners with disabilities ([UNESCO 2023](#); [White 2021](#)). However, there are large variations between countries ([UNICEF 2024](#)).

Education and skilling of young people are a critical area for Africa's development. Many countries are reforming secondary and TVET systems to democratise access, and align with labour market needs ([Master Card Foundation 2020](#); [Mazmabani et al. 2024](#)). Reforms have aimed at improving equity, relevance, employability, and governance, with approaches ranging from Outcomes Based Education, emphasising demonstrable learning outcomes ([Spady 1994](#)) to Competence Based Curriculum, focused on mastery of competences and real-world application, now adopted in Ghana, Kenya, Rwanda, Tanzania, Uganda, and Zambia ([Tahirsylaj 2024](#)). Zimbabwe has developed its curriculum to modernise its course offerings in a changing labor market. This new secondary schooling system integrates classroom learning and industry

partnerships. Rather than taking final exams, students are evaluated throughout the programme. These continuous assessments contribute 30% to the final grades ([Mazmabani et al. 2024](#)). As far as TVET is concerned, countries such as Botswana, Ghana, Kenya, Malawi, Namibia, Rwanda, Tanzania, and Uganda have established national authorities to coordinate workforce development ([Afeti 2018](#)), while South Africa created sector-specific education and training authorities.

Despite these policy changes and curriculum reforms, there are still structural challenges. Overall, most African secondary schools and TVET institutions suffer from inadequate financing, obsolete technology and weak organisational structures ([Afeti 2018](#)). In most African countries, access to quality secondary education and TVET is still unequal and inequitable ([UNESCO 2025](#)). This is partly due to the uneven geographical distribution of schools and training institutions. Well-equipped schools and TVET institutions, which offer training on information communications technology (ICT), are predominantly located in urban areas([Afeti 2018](#)).

The education systems in many countries fail to equip learners with digital skills. Twelve of the twenty countries with the lowest digital skills globally are in Africa, where national scores on the Digital Skills Gap Index¹ range from 1.8 to 5—well below the global average of 6 (Hwu 2023). No comparable numbers exist for secondary education, but 11% of tertiary graduates on the continent have received digital skills training. To bridge this gap and meet future demand, 650 million workers in Africa will need digital skills training or retraining by 2030 ([Caballero & Bashir 2020](#)). Fostering digital skills is a requirement to fully use the opportunities of AI in the education sector. While many AI tools are quite intuitive, general digital skills are necessary to make full use of them. But this is not only a question about ability to USE AI tools. Digital skills will also contribute to a better skilled workforce that is more adapted to respond to the job market needs.

In Africa, AI tools can improve access to and quality of education. ([Chisom et al. 2023](#)) AI can assist teachers in lesson planning or take on routine and administrative tasks, such as creating quizzes, or fine tuning learning material. It can provide students with tutoring or individualised learning plans.

1.1 AI as a new priority in Africa's education policy agenda

Education policy in Africa has steadily evolved to reflect the realities of Africa's digital transformation and respond to emerging technologies such as AI, but the adoption of AI tools seems to have outpaced the policies. The African Union's

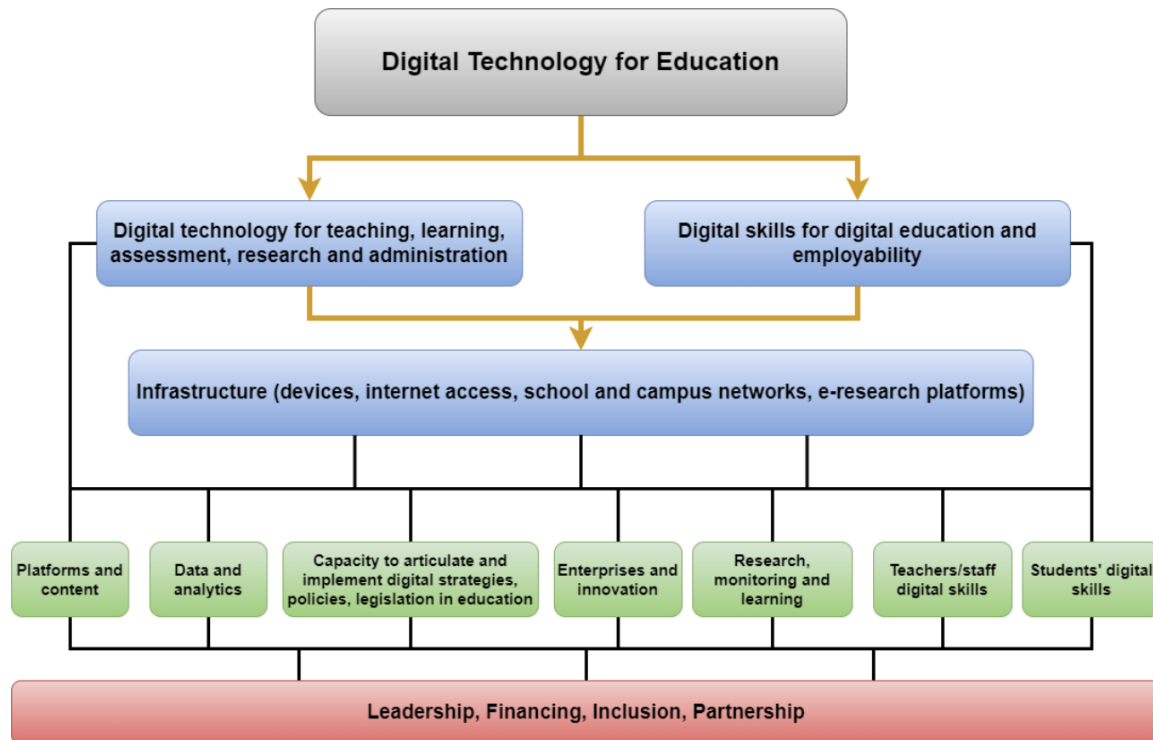
¹ Digital Skills Gap Index was developed by Willey as a planning tool for policy makers. (John Wiley & Sons 2021)

Continental Education Strategy for Africa (CESA) 2016–2025 is a ten-year plan aligned with Agenda 2063. It sought to reorient education systems toward access, quality, gender equality, and the relevance of secondary and TVET education, focusing on systemic reforms while only broadly acknowledging technology and digitalisation ([Continental Education Strategy 2016 – 2025](#)). While CESA 2016–2025 acknowledged technology and innovation broadly, the focus was on systemic reforms rather than the deeper implications of digitalisation.

In contrast, CESA 2026–2035 recognises AI as a cross-cutting mega-trend that education systems must address, alongside the broader trend of digitalization, greening education, and need for education in emergencies. This next phase emphasises equipping learners with 21st-century skills—including AI, ICT, and Science, Technology, Engineering and Mathematics (STEM)—while recognising that the full implications of AI and the Fourth Industrial Revolution for education are still unfolding. It calls for evidence-based policy making, improved governance, updated curricula, stronger infrastructure, and greater support for teachers, with an emphasis on inclusivity and gender equity ([Continental Education Strategy 2026 – 2035](#)).

Another continental policy, which connects education and technology, is the African Union’s Digital Education Strategy and Implementation Plan (2023–2028) (DES). This framework for the digital transition of Africa’s education systems sets targets for building digital infrastructure, developing digital content and platforms, strengthening national digital strategies, and improving data management and EdTech innovation. DES promotes digital literacy for teachers, students, and communities, while emphasising research collaboration and mobilising financial and technical resources to support these efforts. It highlights AI’s role in future education, calling for full curriculum integration across all levels, including TVET and higher education. Key competencies include coding, statistics, computational thinking, data and algorithm literacy, alongside addressing issues of governance and algorithmic bias ([Continental Digital Education Strategy 2023 – 2028](#)). It comes with an implementation plan, including monitoring framework and timeline, as well as ‘funding requirement’ of \$60 million, yet it is unclear based on the policy itself, from which budgets these funds would be mobilised.

Figure 2: Building blocks for digital education in Africa



Source: AU Digital Education Strategy

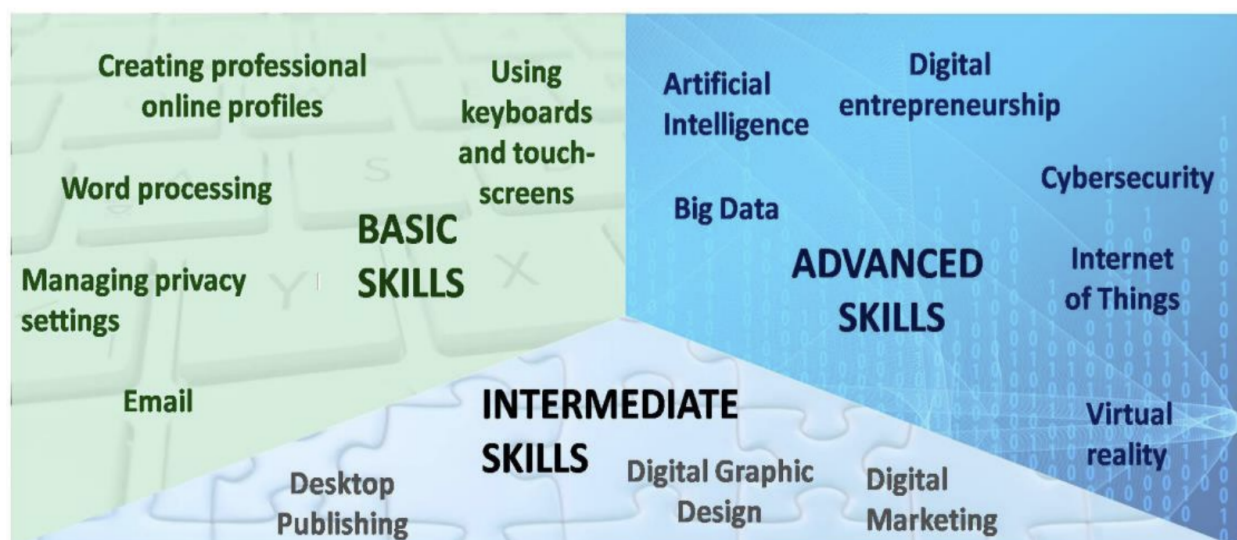
Building on DES, and its strategic objective of promoting EdTech innovation and entrepreneurship, the AU's development agency AUDA-NEPAD released a draft Africa EdTech Plan for public consultation in July 2025 ([AUDA-NEPAD Draft Africa EdTech 2030 Vision and Plan](#)). The EdTech Plan envisions universal access to affordable, high-quality, and localised digital learning by 2030. It emphasises policy alignment, infrastructure expansion, empowering educators, fostering local innovation, cross-border collaboration, and multilingual digital courseware. The plan also prioritises digital pedagogy, data-driven governance, and evidence-based decision-making, and innovation ecosystems in the EdTech sector. However, it acknowledges major barriers, such as infrastructure gaps and unreliable electricity, low teacher digital literacy, limited budgets, fragmented governance, gender disparities in digital access, and the scarcity of localised content in African languages.

1.2 Education in African AI policy frameworks

1.2.1 Continental AI Policies

Beyond specific policy documents on education, African AI policy frameworks also touch on the use of AI in the education sector. The Digital Transformation Strategy (DTS) for Africa (2020–2030) highlights the importance of digital skills for Africa’s digital transformation. It emphasises the need to close the digital skills gap in Africa and recommends the review of the education curricula to include subjects such as Innovation, Science, Technology, Engineering, Art and Mathematics (iSTEAM) and providing technology equipment and broadband internet to educational institutions, ensuring teachers receive digital training and promoting train-the-teacher programmes ([AU 2020](#)). In the context of digital education, DTS points out the need for member states to invest resources towards building the digital skills and calls upon member states to review education curricula according to current needs and trends in the digital society, economy and labour market ([AU 2020](#)). In this regard, it emphasises the importance of offering massive online e-skills development programmes to provide basic knowledge and skills in security and privacy in the digital environment to 100 million Africans a year by 2021 and 300 million per year by 2025 ([AU 2020](#)).

Figure 3: DTS Digital Skills Map



Source: Digital Transformation Strategy

At the time when the DTS was adopted in 2020, they adopted the ITU definition of the Digital Skills Continuum, which categorised AI skills as advanced skills. This notion is changing with the advent of general-purpose AI, which is no longer the

domain of ICT experts but accessible to the broader population, including in the education sector.

Adopted in July 2024, The [Continental AI Strategy](#) highlights that AI has the potential to improve access, quality and affordability of education, but also poses risks. It calls for long-term investment in AI human capital from primary to tertiary levels and emphasises the need for secondary education to integrate coding and AI, teaching computational thinking, applied logic and creative problem solving. In primary level, the strategy envisions introduction of basic coding and mathematics as well as critical thinking, whereas in secondary education coding should be a part of the curriculum. The strategy urges member states to develop inclusive national policies for AI in education, AI competency frameworks for teachers and students, and curricula aligned with future skills needs, supported by context-specific applications, centres of excellence, and continuous policy review. While most countries have yet to embed these commitments in secondary or TVET strategies, digital skills initiatives and education-focused hackathons are emerging, with the aim of building digitally literate citizens capable of advancing Africa's Agenda 2063.

Apart from the AU AI Strategy, other policy documents such as the [AUDA-NEPAD White Paper on Regulation of AI](#) and the [AUDA-NEPAD White Paper on AI and the Future of Work](#) all point to the importance of enhancing and developing African digital and AI skills for the future of work. These documents emphasise the critical need for Africa to have a skilled workforce equipped with digital and AI competencies and the importance of developing a range of skills from digital literacy to advanced AI skills such as coding, data analytics and machine learning.

1.2.2 National AI Policies

Some African countries have developed national strategies for AI. Despite the fact that regulators often struggle to keep pace with the advent of digital technologies (such as AI, blockchain, facial recognition and many other emerging tools), advanced digital markets such as Ghana, Kenya, Nigeria, Rwanda, and South Africa have made great strides, but their level of implementation varies ([Adediran et al. 2023](#)). The following figure shows the extent to which AIED is integrated in national AI policies of 5 African countries.

NATIONAL AI POLICIES AND AIED RELEVANCE

Country	Strategy	AIED relevance	Proposed interventions
Ghana	<u>National Artificial Intelligence Strategy</u> (2023 - 2033)	Expanding AI Education and training features as a key pillar within the strategy	- Conduct annual AI skills gap assessments - Train over a million AI-ready youth by 2033 - Update STEAM and IT curricula to incorporate AI skills, practical coding and the basics of data ethics - Promote training courses for teachers
Kenya	<u>National Artificial Intelligence Strategy</u> (2025 - 2030)	Goal 4 of the Strategy focusses on building a robust pipeline of competent and agile AI workers	- Invest in Education reform and vocational training - Integrate AI into educational curricula - Promote STEM education - Redress existing inequalities to create inclusive AI literacy skills development
Nigeria	<u>National Artificial Intelligence Strategy</u> (2024)	Nigeria's Educational Research and Development Council tasked with Integrating AI and robotics into the primary education curriculum	- Incorporate AI into the education curricula - Launch a comprehensive AI skills development programme that includes curricula reform, teacher training, and reskilling initiatives
Rwanda	<u>National AI Policy</u> (2023)	Education included in priority area 1, focussing on building 21st century skills and high AI literacy	- Modernise school curricula to integrate AI, data, and digital literacy - Introduce modules on AI, machine learning, and data skills as part of the national curriculum. - Establish a Teacher Corps to support and train educators in AI and data. - Launch "train-the-trainer" programmes
South Africa	<u>National Artificial Intelligence Policy Framework</u> (2024)	Seeking to integrate AI from basic to higher education to develop an AI-ready workforce	- Develop specialised training and continuous learning programmes in AI - Incorporate AI into educational curricula

2. From policy to practice: AIED in Africa

This section shows how AI tools are currently deployed in education systems across Africa. It shows the wealth of different technologies already in use in Africa and through select use cases it illustrates the potential for AIED to increase access and quality of education in African countries. It also introduces shortly some programmes to enhance digital and AI related skills and finally, it provides a short discussion of the current literature around evidence of effectiveness of these tools.

2.1 How widespread is the use of AI?

Anecdotal evidence suggests that AI use is rapidly increasing in African secondary and TVET education ([IDRC, 2025](#)), yet there is little data on how extensively AIED is adopted, or in which schools and regions it is applied. However, some evidence does exist. According to the Global Digital Report by DataReportal and Meltwater, internet users over 16 years of age in Kenya, Nigeria and South Africa are among the top users of ChatGPT, with 42 % of Kenyan internet users using the tool ([Kemp 2025](#)). This data doesn't clearly spell out how many Kenyans, Nigerians, and South Africans, for instance, use generative AI for education purposes, and it doesn't provide a more granular overview of the specific groups of people using AI. More generally, there are huge data gaps in AIED. For instance this research could not find reliable data on whether AI adoption is more prevalent in private or public schools, or in urban versus rural settings. This indicates a crucial gap in demographic insights. Furthermore, there is limited information on the type of African schools that formally integrate AI tools into their curriculum. While service providers may share data on the reach of their applications (apps), comprehensive evidence on overall adoption is lacking.

Furthermore, applications like Grok, [Gemini](#), Copilot, and [Meta AI](#) are increasing in usage. Meta AI has emerged as a 'game changer' by taking advantage of its existing social media platforms. The company's Llama 4-powered AI assistant was rolled out in selected English-speaking African countries such as Ghana, Malawi, Nigeria, South Africa, Uganda, Zambia, and Zimbabwe in April 2025. Integrated into popular Meta platforms like WhatsApp, Instagram, Messenger, and Facebook, the app has created opportunities for personalised learning for teachers and students. The app combines voice technology, image generation and smart personal features to create a more human-like digital assistant. For learners, it has allowed them to have personal tutors when doing self-directed learning and home work. Given the popularity of WhatsApp, Instagram and

Facebook among young people in Africa, Meta AI has become an instant hit with learners ([ITWeb 2025](#)).

2.2. AI use cases in African education

To understand how AI is used in African schools, we reviewed use cases of AIED in five English-speaking African countries: Ghana, Kenya, Nigeria, Rwanda, and South Africa. Linguistic accessibility was one of the main reasons we focused on predominantly English speaking African countries. The countries were selected to include a variety of geographical and socio-economic contexts, as well as different policy approaches towards AIED. The majority of the use cases shed light on secondary education initiatives with the exception of one TVET case study from South Africa. AIED technologies have been developed and deployed mainly in advanced digital markets like Kenya, Nigeria, Ghana, Rwanda, and South Africa. Overall, there was very little that could be said about less developed digital markets hence the focus on these five countries.

AI USE CASES IN AFRICAN EDUCATION



Learner assistance

Personalised learning and intelligent tutoring

- Ghana based **Rori**, is a WhatsApp-based math tutor offering individualised learning support enabling engaging learning.
- Kenya's **M-Shule**, **Kytabu** and **Eneza Education** platforms employ AI algorithms to analyse learning patterns and adapt learner content to individual needs.
- OpenAI's **ChatGPT**, Google's **Gemini**, and Meta's **Meta AI** have enabled personalised learning opportunities for teachers and learners

Interactive and novel learning

- **Mindspark** in Rwanda provides personalised instruction to students using games, videos, and activities.
- **FoondaMate** in South Africa leverages Meta Llama's foundational model, enabling learners to create an interactive AI-enabled study buddy.



Inclusive & adaptive learning

Accessible and assistive tools

- Speech-to-text and real-time translations have made education more inclusive for students with disabilities or language barriers.
- **Kitso** by Digify Africa offers AI-driven chatbots for educators, parents and students, delivering educational support via simple text interfaces.

Remote learning

- Offline-compatible platforms such as **Kolibri** enable learning in resource scarce settings. Critical in public health crises such as Covid-19, these platforms are also useful in climate-related disruptions or in conflict.

Local language utilisation

- **Lelapa AI** in South Africa develops tools for underrepresented African languages.
- **Vambo AI** in South Africa empowers educators and learners by providing multilingual resources and assistance.



Teacher support

Lesson design

- **Hodari** is a mobile app supporting with grade management, lesson planning and administrative tasks.
- **New Globe** delivers structured lesson guides, real-time feedback, and ongoing support enabling educators to continually improve.
- **Rising Academies Network** in Rwanda, Sierra Leone, Liberia and Ghana helps teachers to create interactive prompts to reinforce teachers' understanding of lesson content.

Automation of tasks

- The automation of tasks like grading, record-keeping, and communication enables educators to dedicate more time to teaching and mentoring.
- **Rising Academies Network** is using optical character recognition for automatic grading of student assessments.



Education management

Curriculum development

- **Schoolinka** platform in Nigeria uses a learning management system to provide educators with robust and versatile access to high-quality and self-paced interactive course contents. Schoolinka can identify areas where teachers need improvement, ranging from subject matter expertise to pedagogical techniques.

Career and employment opportunities

- **Schoolinka** job board connects teachers with job opportunities matching their skills, experiences, and qualifications, facilitating schools in discovering exceptional teaching talents.
- South African-based **Tshepo 1Million platform** combines psychometric assessments with AI-based recommendations to guide unemployed youth toward jobs.

The use cases show that there is real ambition in the continent to take advantage of AIED. Personalised learning solutions are the most common use cases (in line with findings of [Wang et al. 2024](#)). AI tools in these and other use cases cater to students with disabilities, and provide learning materials in students' mother tongues. There are also tools that support educators with curricula development, aligning their lessons with curriculum standards, and student needs, as well as assist in administrative tasks ([Cross & Feldman 2025](#)). Grading simple multiple-choice quizzes is another example of how AI can support teaching and learning ([Haoyang & Towne 2025](#)). Automated systems can detect at-risk students with higher accuracy and take steps to improve their learning outcomes ([Embarak & Hawarna 2024](#)).

AI can also help gather and analyse student data, for instance on attendance and performance. This assists teachers with spotting learners who need extra support, or who are at risk of dropping out. In low-income countries – most of which are in Africa – only half of the youth in the age group for upper secondary education are in school, and particularly girls are at high risk of dropping out ([UNESCO 2022a](#)). Many students face challenges – such as early pregnancies, poverty, or child labour –, and identifying these at-risk students in a timely manner is crucial for effective intervention and support.

The use cases illustrate the strong presence of the private sector and donors in AIED. While some tools are developed by non-profits (e.g. Kolibri, Kitso), the majority are developed in the private sector (e.g. Lelapa, M-Shule, Schoolinka, Foondamate, Rising Academies), through public-private partnership or with funding by large private companies (for instance, the Sci-Bono learning centre is supported by Huawei and Intel as well as the Government of Finland). Most AI start ups in the education sector are relying on philanthropic organisations like Mastercard Foundation, Bill and Melinda Gates Foundation, IDRC Canada, Artificial Intelligence for Development (AI4D), the Global Partnership for Education Knowledge and Innovation Exchange (GPE KIX).

Most AI use cases in African education are developed to address uniquely African challenges, making them more easily available by building on existing apps that are already popularly available and included in data bundles, such as Whatsapp. This was also confirmed by our interviewees, many of whom pointed out that in resource-constrained contexts, it is more beneficial to anchor AIED tools to technology already in use.

2.2 AI gaps in digital skills programmes

Across Africa, a mix of local and international actors are offering digital skills programmes in the formal education sector and informal education sector, and many of these offers target young people (UNESCO IIEP Regional Office for Africa 2022; Domingo et al 2024). The aim of these programmes is to close the digital divide, improve digital literacy and have a tech-savvy workforce. For example, Kenya seeks to train 20 million Kenyans in digital literacy by 2032 through its National Digital Literacy Skills Curriculum (Indeje 2025). South Africa's National Digital and Future Skills Strategy (2020) and the Digital Skills Massification Drive (2024) have created a framework for teaching basic digital literacy to more than 20,000 citizens – many of them young people – through a system of “Digital Ambassadors” (Republic of South Africa 2024).

The private sector, international donors and civil society are also active in designing and rolling out digital skills programmes. The International Telecommunication Union (ITU), International Labour Organisation (ILO) and United Nations Development Program (UNDP) have supported South Africa in the development of its National Programme on Digital Skills for Decent Jobs for Youth. Kenya's National Digital Literacy Skills Curriculum was developed through a partnership between KICTANet, The African Centre For Women, Information and Communications Technology, and the British Council, with support from the UK's Digital Access Programme (Indeje 2025). GIZ has also partnered with different African countries to implement digital skills programmes. So have private companies like MTN and Assupol.

Based on our review, it seems that a focus on AI-specific skills is only emerging in these activities. One example is Zimbabwe's Digital Skills Program, which includes training modules on data science, AI and programming fundamentals. The intended beneficiaries are expected to enrol for four core modules which include data science fundamentals, programming basics, android development using Kotlin and AI fundamentals. The programme is done in partnership with the United Arab Emirates under the Government Experience Exchange Program (Ranjan 2025). The programme is run by the E-Government Unit in the Office of the President and Cabinet, the Ministry of Higher and Tertiary Education, Innovation, Science and Technology, as well as the Ministry of Skills Audit and Development. It targets learners in secondary schools and TVET training institutions across the country. On the other hand, the Government Experience Exchange Programme focuses on building the capacities of the youth under the National Youth Policy. It also aims to ensure that the public sector institutions are reformed for high performance, service delivery and modernisation. In South Africa, private

organisations like SCi-Bono Discovery Centre have partnered with Intel and Dell for AI education running the Intel for Youth programme to equip South African children (ages 13–19) with AI and tech skills like programming robotics, natural language processing and data management through hands-on learning.

In most African countries, there is no standardised national school curriculum to determine which AI and coding programmes will be taught in secondary education, the depth of the learning materials and the age and grades to receive the training. However, in some high connectivity countries like Kenya, Rwanda and South Africa, the education departments have been actively involved in the development of relevant curricula. For example, [Sci-Bono](#) partnered with the Gauteng Department of Education in South Africa to provide advanced technology and AI exposure and training through its IT Academy, Youth Club and 4IR exhibit. The target beneficiaries are learners doing Grade R–12. Teachers are also trained to improve outcomes in science, technology, engineering, and mathematics (STEM) subjects. Kenya recently revised its [competency-based curriculum](#), which emphasises digital literacy and coding and enables easier access to AI-related technology to aid teaching and learning. It has the net effect of improving access to tools, generative AI literacy and capacitating learners with coding skills.

2.3. AIED and learning outcomes: Encouraging results on balance

Although some initial studies suggest that AI has improved learning outcomes in certain environments, insufficient data exists across the continent on how AI is being harnessed for secondary education and TVET training. Although AI tools are not universally used across African schools, there is evidence that the support of AI technologies has improved students' academic achievement compared to traditional learning environments ([Dong 2025](#)). This finding is also consistent with Bachiri et al. ([2023](#)), who showed that a gamified, AI-driven learning tool significantly improved learning outcomes among fifth-grade students compared to traditional teaching methods. Authors used Moodle plugin, that transforms conventional assessments into an interactive, gamified experience, in a Massive Open Online Course (MOOC) attended by 10 year olds on average in Morocco. In Nigeria, a World Bank-supported AI-powered tutoring programme led to notable learning gains, particularly in English, as well as in digital and AI skills, with girls benefiting the most ([de Simone et al. 2023](#)). These cases suggest that AI tools, especially those involving personalised or interactive learning, can enhance educational results. In the same line, there is some indicative analysis that Rori virtual tutor has significantly improved math performance of students in Ghana ([Unal 2024](#)). Independent evaluations of the Rising Academies Network have

found that Rising students make learning gains two to three times greater than peers in comparable schools ([Dalberg 2024](#)). The network is made up of schools mostly in West Africa. Initially set up in Sierra Leone in 2024 as a stop gap measure to address the after effects of the Ebola pandemic, the network now focuses on implementing digital learning solutions.

These are promising results, but analysts also raise some questions about the links between AIED tools and learning outcomes. For instance, one study found no significant effect of Chatbot-Based Learning on students' learning performance ([Yin et al., 2021](#)). Some also argue that improvements observed in some AI-related interventions may be attributable more to the benefits of extra tutoring than to AI technology itself ([Meyer 2025](#); Molina et. al., [2024](#)). The AI can thus supplement, not replace, existing teaching.

A major limitation in assessing AI's effectiveness is the lack of comprehensive and long-term data, particularly at the primary and secondary education levels, as well as TVET. Most studies to date focus on higher education. One meta-analysis found that 70% of AI-in-education studies published between 2019 and 2024 were conducted in higher education settings, with only 17% focusing on junior and senior high schools and just 10% on primary education. These studies often involve short-term interventions and rely heavily on self-reported perceptions rather than objective learning outcomes ([Dong 2025](#)).

There are also concerns that AI use in education might encourage surface learning and hinder the development of critical thinking. For instance, one study argues that while the chatbots offer fast and well-articulated responses to questions, they may not encourage reflection in a deeper manner (Yi [Wu 2023](#)). As such, while AI shows promise, more rigorous and context-specific research is needed to understand its real impact on education quality and long-term learning.

AI-powered adaptive learning platforms can also support teachers. Automating tasks like grading, record-keeping, and communication, allows educators to focus more on teaching and mentoring. While most research reports positive impacts, success depends on helping teachers make the best use of the time saved ([Molina et al. 2024](#)). Interviews with teachers in Namibia, South Africa and Zimbabwe showed that AI has the potential to lessen their teaching load, and teachers generally welcome teacher-facing AI-based tools.

Applications like Schoolinka were developed in response to the shortage of qualified teachers in rural schools in Nigeria. The application provides educators

with access to high-quality and self-paced interactive course contents for teachers to increase their professional capacities. The platform uses AI-powered recommender systems to connect qualified teachers with schools. It is unique in the sense that it is capable of identifying skill gaps among educators and providing tailored professional development programmes to address them. The platform identifies teachers' skills gaps, recommends personalised training courses, and matches them with suitable roles in schools. Teachers can access courses, resources, and certifications, while schools can find qualified staff. Thus, Schoolinka deploys AI to identify training needs of educators, match them with online courses hosted on their platform. They then train these teachers, thereby equipping them with the required skills. They also help their graduates access better paying jobs with our partner organisations. The platform also offers mentorship opportunities by top education professionals (Interview, 2025). Nigerian teachers who have used the app are reporting higher job satisfaction and higher confidence in their teaching skills. As a result, the app has been hailed as professionalising teaching and improving educational quality in Nigeria.

3. Challenges of AIED: Risks to privacy and equality

The opportunities of integrating AI in education must be weighed against the challenges. The use of automated tools in this sensitive sector poses serious risks to children's rights and privacy. At the same time, it can exacerbate bias against underrepresented population groups and structural inequalities based on access to the internet or digital devices.

These risks are compounded by the fact that the end users of AI EdTech are often children and youth – a highly vulnerable group. Whereas AI can support personalised learning and streamline teaching, these tools must be cautiously deployed, as minors bear the consequences when systems are misused or poorly regulated.

This is why interviewees for this report called for the responsible development of AI applications, with a sound pedagogical approach, responsible data collection and use, as well as particular attention to issues such as data bias. Others highlighted the need to acknowledge not only children's need for protection, but also their agency and interests in AI use and deployment since even young children are often adept at using these technologies.

3.1 Privacy and security concerns

The adoption and use of some AI tools by learners raises ethical and legal questions about data privacy and security. Since the majority of learners in secondary education institutions is below 18 years old, there are additional concerns over how children's personal data (considered as sensitive) is processed through these AI tools.

For instance, intelligent tutoring systems collect and analyse immense amounts of personal data. This can include sensitive information about students and educators, including their emotions, behaviours, online activities, attendance records, and even biometric data. This also links to broader security issues: the data will need to be stored in a safe manner that prevents data leaks. Security risks also relate to data collection, data processing, data dissemination, and invasion (encroaching into an individual's personal space, choices, or activities). The risk of data breaches, exploitation, and constant surveillance are some of prime examples of privacy concerns associated with AI usage in education.

The concerns are not only hypothetical but there is evidence of reckless and harmful data use and privacy violations. A study by Human Rights Watch² about the use of EdTech during the COVID-19 pandemic found that 89 percent of the investigated EdTech products appeared to engage in data practices that put children's privacy at risk, for example through the use of tracking technologies without the consent of children or their families, and by granting access to children's personal data to advertising (AdTech) companies ([Human Rights Watch 2022](#)). These practices are more difficult to rein in if regulatory systems for data protection are not strong enough ([Gouseti et al. 2024](#)). While countries with more developed digital markets also tend to have stronger regulations, 35% of African countries have not yet implemented data protection laws ([Data Protection Africa 2023](#)).

Despite the emergence of national AI policy frameworks and guidelines, there is a lack of AI-specific laws in Africa. This has meant that data protection laws have assumed the de-facto role of governing the processing of sensitive and confidential data by AI tools and systems. Although the [Malabo Convention](#), which was adopted in 2014, provides a ready-made continental soft law for data protection and security, it has been criticised for several aspects (African Union 2014). Unlike the EU, where the The General Data Protection Regulation (GDPR)

² The research included 163 EdTech products in 49 countries across the world. In Africa, the following countries were represented: Burkina Faso, Cameroon, Côte d'Ivoire, Egypt, Ghana, Kenya, Malawi, Morocco, Nigeria, South Africa, and Zambia.

provides a robust legally binding regime for data protection and the AI Act offers granular regulation and enforcement of AI systems, the Malabo Convention lacks strong enforcement mechanisms, and remains largely soft law in practice. Furthermore, it lacks detail with regards to AI technologies. The lack of regulatory guardrails presents risks for the protection for confidential education data.

3.2 Challenges to representation and inclusion

AIED also poses challenges of representation and inclusion. Major AI applications such as ChatGPT, which is developed in Global North, are criticised for reproducing worldviews that are ‘mainstream’, leaving minority opinions overshadowed and not providing nuance. This may undermine the plurality of opinions, ideas and worldviews – which is a crucial factor for fostering critical, analytical thinking in education systems. There is fear that Generative AI tools and systems may serve to preserve an unequal world, in which “coloniality of knowledge, power and being” reign supreme ([Maldonado-Torres 2007](#)). Therefore, learners should also be encouraged to criticise and question the inputs provided by the AI.

Undermining diverse perspectives is closely tied to a key concern in the use of AI in education: bias. AI systems often inherit and amplify the biases present in their training data and underlying algorithms, reflecting societal prejudices ([Ferrara 2023](#)). As a result, AI tools can reproduce historical and systemic inequalities, including gender and racial biases, particularly in applications like predictive analytics. This is especially problematic in early warning systems, where biased data or models can unfairly influence a student’s academic path and future opportunities ([Salloum 2024](#)). The fact that AI models, developed mostly in the Global North tend to reproduce the same worldviews also lead to structural biases being inherited from the designers and the wider socio-cultural context of production. ([Muldoon & Wu 2023](#)). They may also reflect different cultural biases or values, which can lead to inaccurate or insensitive results. This is not an issue only relevant to Africa though, but these biases also affect minorities within the Global North.

These concerns can be alleviated by investing in African companies and markets – in businesses that create AI models that are better suited for local curricula, languages and country contexts, and trained with African data. However, some conditions will have to be met. First, a key issue is to ensure that these models don’t discriminate against local minorities or reproduce narrow worldviews. Second, creating locally fitting models comes with a need for significant financial investments. Third, interviewees pointed out that there is no need to ‘reinvent the

wheel', as it might not be cost effective. Rather, governments should invest in localising existing AI tools to better fit African contexts. In the same vein, interviewees call for empowering the learners with AI literacy, critical thinking, and ethics training to ensure responsible AI use.

The ethical challenges in production and use of AI are widely known, and were acknowledged by UNESCO in its [ethical guidelines](#) for AI governance. On the African side, the draft study by the African Commission on Human and People's Rights (ACHPR) calls for member states to adopt a comprehensive, rights-based approach to AI development and deployment, emphasising ethical considerations, inclusivity, and sustainable development. It further encourages member states to create enabling environments for AI innovation and build capacity for its responsible use. It states that the impact of AI on the right to education must be examined in the context of African values and cultural context. ([ACHPR 2025](#))

3.3 AIED interplays with structural inequalities

The challenges of AIED in the African education sector often link to existing issues. A lack of basic digital infrastructure can hamper the successful adoption of AIED. In the worst case AI can thus deepen existing inequalities in access and quality of education.

Despite improvements over the past decades, access to quality education across Africa remains highly uneven. Educational inequality, particularly along gender, geographic and socio-economic lines, limits access and perpetuates cycles of poverty. Access to secondary education is particularly patchy in conflict-affected countries and among refugee populations. For instance, the World Bank has found that only 31% of refugee children have access to secondary education in fragile countries ([World Bank 2023](#)). The COVID-19 pandemic further widened these inequalities, as only a relatively privileged minority was able to substitute in-person learning with digital alternatives, exposing the continent's limited infrastructure for equitable online education. One study revealed that educational attainment in sub-Saharan Africa in the post-COVID-19 era is negatively and significantly influenced by the digital divide ([Kelly & Rutazihana 2024](#)). This is significant, as when AI tools become increasingly common in the secondary education sector, those that do not have access to them may be left behind, particularly if AIED is used to replace in-person teaching.

The inequalities in access also link to poor infrastructure, which prevents the unconnected from using AIED tools. In many African countries, the digital divide,

weak funding, and insufficient ICT infrastructure undermine both access to and quality of secondary education ([Shibuya 2013](#)). Limited internet, unreliable energy, and low computing capacity further constrain the use of AI in secondary and TVET institutions ([Kelly & Rutazihana 2024](#)). This shows that success of the AIED investments also hinge on investments to education in general as well as digital infrastructure.

4. Key players in AIED in Africa: between profit and the public good

AIED illustrates the tension between profit and the public good in African education. It represents the latest big wave of commercialisation in education, where private firms develop tools that governments or families purchase ([Regan et al. 2019](#)). Commercialisation of education is a prevalent phenomenon in several African countries, often driven by insufficient investment in the public school system by the governments, that is sometimes coupled with deliberate government policy of liberalisation ([da Silva et al. 2024](#)). The heavy private sector involvement raises questions about who sets the rules. Governments need to balance between their role as regulators and the need to foster innovation. Learner and teacher groups need to push for equity and protection. Given fierce competition, international actors increasingly compete for influence and markets. How these four groups balance their interests, and the power dynamics between them, will determine whether AIED strengthens education as a public good or deepens its commercialisation.

4.1 African governments

African governments play a central role in shaping AIED through regulation, funding, and policy direction. Their investment in infrastructure, digital skills training, and locally relevant content is critical for technological interventions to succeed. Political context also matters: Government commitment can enable ethical integration of AI in education, while leadership changes often bring policy shifts, budget reallocations, or new priorities that can either advance or disrupt EdTech initiatives ([Adediran et al. 2023](#)).

Box 1: Growing of Edtech ecosystem in Rwanda

Rwanda illustrates how strong political commitment can drive the adoption of EdTech solutions. Since 2000, the country has made a concerted effort to introduce computers in schools and embed ICT across the education curriculum through various initiatives ([Rubaziga et al. 2011](#)). At the same time Rwanda has made big investments in infrastructure, including access to electricity, with massive increases to its electricity production capacity ([Dye 2020](#)). The country has also invested in digital skills ([Domingo et al 2024](#)) and expansion of digital infrastructure and services ([Mkrtchyan et al 2020](#)). The high level of political will to spearhead the country's digital transformation has also translated into political will to adopt EdTech solutions ([Laterite 2023](#)). Rwanda is actively embedding technology in education, with COVID-19 having spurred a wave of new EdTech firms in 2020. The government's ongoing efforts to build policy, systems, and digital literacy build a strong enabling environment for EdTech ([Laterite 2023](#)). The country has made commitments to promoting Edtech at a strategic level and this has also materialised in several initiatives, such as rolling out smart classrooms. The aim of smart classrooms is to integrate technology across all aspects of education, including lesson preparation, delivery, assessment, and research, yet, despite investments the program ran into challenges due to infrastructure gaps (namely electricity). ([Laterite 2023](#); [McDaniel n.d](#)). Other initiatives include Hanga Ahazaza, which has an aim to develop e-learning courses to TVET students and teachers and Capacity Development for ICT in Education (Kimenyi et al. [2020](#)). Yet the study by the World Bank has noted that while notable progress has been achieved in expanding EdTech provision to schools and rolling out digital systems and content, challenges persist in ensuring these tools are used effectively for learning quality, digital skills development and resilience building against future shocks ([Carvalho et al. 2024](#)).

Source: Authors

The strategies presented in Section 1 show that African governments are exploring ways to benefit from the AI revolution, by using it for the transformation of various sectors including education ([Unver 2025](#)). At the same time, interviewees pointed out that many policies have not resulted in binding regulations, and that African governments may hesitate to enact legislation that they do not have capacity to enforce or that may deter foreign investment.

Secondly, while frameworks and strategies signal high levels of ambition, it seems they struggle to materialise in education budgets ([Human Rights Watch 2025](#)). As of 2021, African governments spent on average 3.7% of Gross Domestic Product on

education, showing little change since 2012. Education spending relies much on the households, which contributed 27 percent of total education spending in 2021 (World Bank and UNESCO [2024](#)). At the same time, some interviewees cautioned that the public sector may view AIED as a tool for saving education expenses and teachers' time.

4.2. Representatives of learners and educators

Another crucial stakeholder in the AIED ecosystem are learners and student associations. They represent the end users of educational technologies. Their interests centre around having access to AI products and services that empower and support human intelligence rather than replace it. Learners are interested in promoting and safeguarding digital literacy and skills, critical and creative thinking, and lifelong learning as key to navigating and adapting to an increasingly automated world. Learners are interested in seeing AI technologies that are designed with inclusivity in mind, so that learners from all backgrounds can access and benefit from the tools. The Southern African Students Union (SASU) is the main student association representing students across the SADC region. SASU aims to strengthen regional cooperation and collaboration among national student movements within the SADC. Interviews with its leadership indicated that they are caught up between optimism and pessimism. They are optimistic that AI will further democratise secondary education and TVET access yet pessimistic about its surveillance potential. SASU also emphasises the importance of addressing potential risks and ethical considerations associated with AI in education, advocating for a balanced approach to maximise benefits while mitigating negative impacts.

Teacher associations in Africa are navigating the integration of AI in education with a focus on ethical frameworks, teacher support, and ensuring equitable access. In Zimbabwe, the Zimbabwe Teachers Association (ZIMTA), Amalgamated Rural Teachers Union of Zimbabwe, (ARTUZ), and Progressive Teacher's Union of Zimbabwe (PTUZ) recognise the potential of AI in transforming secondary education. However, some of the interviewees warned against the pitfalls such as magnifying digital inequalities between urban and rural schools. In South Africa, the South African Democratic Teachers Union (SADTU) and the National Professional Teachers' Organisation of South Africa (NAPTOSA) also highlighted the importance of ensuring that teachers are not left behind in the latest Fourth Industrial Revolution (4IR). While recognising AI's potential to address challenges like teacher shortages and improve learning, they also emphasise the importance of respecting teachers as professionals and avoiding over-reliance on technology that could devalue human interaction. Teacher associations are also concerned

that AI can be used to replace them with machines. Therefore, the interests of teacher associations are to ensure that job security for their members is guaranteed. Ethical considerations, human and AI collaboration, emotional and social intelligence as well as the need to build inclusive, equitable education systems are at the top of teacher associations' concerns. Other topics are intellectual property rights, copyrights, academic integrity and misinformation. Interviewees pointed out an urgent need for collaboration between educators, researchers, policymakers, students and technology developers to ensure AI technologies remain ethical and inclusive and that they promote human potential.

From a user perspective AIED brings costs that have to be weighed against potential learning outcomes and outcomes for teachers. Essentially, there are both formal and informal ways in which AI tools are entering the education system. The decision to use AI tools in schools is determined in some cases by school governing bodies, ministries and education departments, by teachers and students and to some extent by edtech innovators who pitch their AI solutions. These also have an effect on the cost implications of the AIED tools for the learners: for instance, if no tools are available by the school the learners may use general AI applications like Chat GPT, and those who can afford it may pay for more advanced models.

Some AI applications are being designed with the intention of being inclusive of different demographics, including those who are from low resource settings with limited access to the internet and limited access to digital devices and those who face financial restrictions. Applications like Rori, an AI math tutor in Ghana, works on basic mobile devices connected to low-bandwidth data networks, and the marginal cost of providing Rori is approximately \$5 per student. Other AI solutions like Meta AI are free, while ChatGPT has an option for a freemium account. The low cost of some of these AI tools make them potentially scalable interventions in the context of LMICs' education systems.

4.3. Private sector in African AIED space

The private sector, ranging from multinationals to Africa-based companies, SMEs and innovators, is driving EdTech growth. Africa's EdTech market is projected to surpass US\$20 billion within the next decade ([Holon IQ 2023](#)). Meanwhile, the continent's AI market, valued at \$4.92 billion in 2025 (2.5% of the global total), is expected to grow at a 25% compound annual growth rate, reaching up to \$12 billion by 2030 ([Mawire 2025](#)). Some estimates are bolder: McKinsey projects generative AI alone could unlock \$100 billion annually across African economies

([Kuyoro et al 2025](#)). While broader than AIED, these estimates highlight the scale of opportunity. The African AIED market is expanding, though, 70% of startups are concentrated in South Africa, Tanzania and Nigeria ([Adediran et al. 2023](#)). Over 300 EdTech ventures are active continent-wide, with 23 raising USD 34.6 million in 2023, a 40% increase from 2022 (Jackson 2024). At the same time, major global players including Google, Microsoft, Meta and Open AI are highly active, targeting consumers, businesses and especially governments, which represent the largest potential market for AI solutions ([Digital Education Council 2024, Okolo 2025](#)).

EdTech companies in Africa often focus on personalised tutoring and teacher support to improve access, affordability, and quality in underserved communities. Notable examples include Nigerian start-ups like AltSchool and uLesson, while Cassava Technologies is investing in Africa's first AI factory and new data centres. [Google Labs in Accra](#) has also developed speech-to-text tools for non-standard speech, advancing literacy and multilingual learning.

Our use cases also show that private companies actively partner up with governments and international actors. Intel, for example, has partnered with Sci-Bono on Digital Readiness Programs ([Ntsobi & Mwale 2024](#)), while Google and Microsoft have partnered with Kenya's Ministry of Education to build teachers' AI capacity in teaching, assessment, and classroom management ([Wakiaga 2025](#)). Launched in 2019 by the ITU and Cisco, the Digital Transformation Centres Initiative equips local partners in 14 countries with training materials, equipment, and train-the-trainer programmes, in collaboration with a mix of US-based and local private sector companies and foundations ([Domingo et al 2024](#)). Beyond formal partnerships, networks like Rising Academies share effective AI practices with governments and educational organisations.

While such partnerships expand opportunities for education, they also raise questions about data sovereignty and long-term dependency. International companies often provide the technological backbone, data hosting, and training materials, which can risk centralising control of African education data in US- or Europe-based systems, and limit African governments' ability to shape how education data is governed, stored, and used ([Dosunmu 2025; Soulé 2024; Hummel et al. 2021](#)). These debates link closely to the diminishing resources for international cooperation. With stagnating ODA, donors increasingly encourage private sector engagement, which can accelerate innovation but also create new asymmetries of power between African governments, corporations, and international partners. Involvement of private companies also raises questions about their interests and power in education. Interests of firms range from aiming to improve African education to expanding business opportunities. Within the

data economy, private companies are generating value from AIED primarily through two models. The first is licensing, where governments or schools purchase access to tools through public procurement. The second is data monetisation or ‘assetisation,’ where learner data collected through the AIED is transformed into a commercial asset – sometimes sold to advertising technology (AdTech) companies or used internally to improve products ([Faul 2023](#)). While these practices fuel innovation and business growth, they also introduce tensions between profit motives and education as a public good.

A key concern is the risk of prioritising market success over educational impact. ([Adediran et al. 2023](#)). One example is Knox’s ([2020](#)) study on AI and education in China, which shows how high-profile government policies, explicitly linked to China’s geopolitical ambitions in technology, have fostered favourable conditions for a thriving AIED industry. Yet, Knox argues, that this has first and foremost driven the pursuit of marketable products as a general approach of the private sector, rather than educational rationale. Africa faces a similar risk of compromising educational standards in the pursuit of marketable products.

Another challenge is the hype that often surrounds AIED. EdTech companies promote claims of personalised, cost-effective, and engaging solutions, yet evidence of long-term impact frequently lags behind these promises ([Regan et al. 2019](#)). Interviews in Africa reflect this dynamic, with different stakeholders noting both excitement and unease that inflated expectations may obscure risks, divert resources, or fund unsustainable projects in low-resource settings.

The adoption of AIED also risks deepening inequalities. Infrastructure gaps, affordability constraints, and rural and urban divides already disadvantage many learners. Profit-driven solutions may further privilege urban, well-resourced schools that can afford devices, subscriptions, or data costs ([Adediran et al. 2023](#); [Timcke et al. 2024](#)). Without strong public investment and regulation, Africa risks entrenching a two-tier education system where privileged learners benefit from cutting-edge digital tools while poorer students fall further behind. Yet, private actors also have the potential to expand access and drive scale, reinforcing systemic digital capacities across the continent ([Injini 2024](#)).

Power and influence are central questions. When governments overly rely on private AIED providers, it may give companies and investors disproportionate control over educational standards and infrastructure ([UNESCO 2022b](#); [Williamsson et al. 2023](#)). Investors increasingly shape EdTech not only by providing funding but also by promoting their visions of education through networks and policy engagement ([Komljenovic et al. 2023](#)). For instance Learn

capital, a large investor in education believes that “AI-driven, personalized, and outcomes-based learning experiences will define the future” and mobilising venture capital is essential in getting real long-term impact ([Learn Capital 2025a](#); [Learn Capital 2025b](#)). Investors historically have skirted the education sector due to low returns, long investment cycles, fragmented markets, heavy regulation, and public hesitancy towards privatisation. With Edtech this has started to change as there is much room for growth in digitalisation of education. This was even further spurred by the pandemic.

The way forward requires balancing interests through strong governance. Effective collaboration between technology companies, governments, and educational institutions offers the best chance for AIED to achieve transformative yet equitable impact. Tech companies contribute technical expertise, while governments act as enablers by creating supportive environments for innovation. Educational institutions, grounded in local realities, play a critical role in ensuring AI tools are both pedagogically effective and culturally appropriate. Public-private partnerships can amplify this synergy, enabling large-scale educational transformation where innovations are not only cutting-edge but also contextually relevant ([Murungu 2024](#)).

4.4. International actors in AIED space in Africa

AIED in Africa is also a topic that is increasingly of interest for international cooperation actors – from international organisations to bilateral donors.

The UN agencies engage in AI in African education by setting norms (ethical use, child rights) and piloting inclusive innovations. Their engagement is driven by a vision of using AI to accelerate SDG4 (quality education) without deepening the digital divide. UNESCO is a key actor, providing vast resources, analysis and capacity-building for educators and policy makers, while advancing frameworks such as the [2019 Beijing Consensus on Artificial Intelligence and Education](#) (UNESCO 2024). The Beijing Consensus emphasises safeguarding human rights, enhancing human capacities, and aligning AI with sustainable development. UNESCO thus combines technical support with strong ethical advocacy. The United Nations Children's Fund (UNICEF) is also active in the African AIED space. UNICEF approaches AIED through child empowerment and protection ([Unicef Innocenti 2025](#)) and has published a policy guidance on AI for Children (Dignum et al. [2021](#)) to promote children's rights in government and private sector AI policies and practices, and to raise awareness of how AI systems can uphold or undermine their rights.

The World Bank is also an active player in AIED where it applies and market-driven, results oriented approach to AIED, prioritising measurable outcomes, efficiency and return on investment ([Salimi 2024](#)). Critics argue that this focus steers investments toward efficiency and short-term, quantifiable results—such as data collection and system performance—at the expense of deeper, long-term educational needs and the instructional potential of EdTech, particularly for marginalised learners whose needs are less easily captured in metrics ([Salimi 2025](#)).

The European Union (EU) is another important actor in digital education in Africa, though its focus on AIED remains limited. Yet the EU seems well positioned to play a more active role, based on its strong frameworks on the digital transition and education, including on digital literacy and skills. The EU’s Digital Competence Framework for Citizens (EU DigComp) is viewed as the ‘global gold standard’ by international education experts ([Domingo et al 2024](#)). It provided the foundation for similar frameworks by UNESCO and the World Bank, which adapted it to the context of low-income countries. The latest version, DigComp 2.2 in 2022, included additional materials for interacting with AI systems. The upcoming DigComp 3.0 will expand this focus on AI, also in response to recent EU legislation such as the AI Act and the Digital Services Act (DSA) (European Commission, Joint Research Centre [n.d](#)).

Digital transition in education also features in several bilateral donor strategies, including EU member states. For instance, the UK’s Digital Development Strategy 2024-2030 promotes initiatives such as the EdTech hub co-led with the World Bank, Gates Foundation and UNICEF. Germany has also an elaborate digital policy in their international cooperation. For instance, in its position paper on high quality education, BMZ points out that it uses innovative high-tech technologies, such as the use of virtual reality and artificial intelligence, to improve access to and quality of education ([BMZ 2025](#)).

Box 2: Team Europe’s support to AIED

While AIED is not an explicit priority area in EU external action, multiple strategies create a solid mandate for engagement. The International Digital Strategy (2025) and Council conclusions on Digital Diplomacy (2023) emphasise international partnerships, digital literacy, and human-centric approaches to technology, including with African partners. The NDICI-Global Europe regulation (EU 2021) promotes education at all levels, and encourages the use of digital

technologies in teaching and learning, and supports partner countries' digital transition ([EU 2021](#)). In that vein, The new proposed regulation for the upcoming Global Europe Instrument states that the instrument "should promote digital cooperation with partner countries and their digital transition" (recital 53, [EC 2025c](#)). The EU Digital Education Action Plan (2021–2027), though internally focused, recognises the international dimension of digital education through knowledge sharing, collaboration, and ethical considerations, reinforced by internal guidance under the Global Gateway. Together, these strategies signal that while AIED is not an explicit headline priority, the EU's policy frameworks already provide the mandate and entry points to advance it in cooperation with African partners.

AIED is not yet a central focus of EU programming in Africa, but elements appear across broader initiatives. Under the Global Gateway (GG) Strategy, the EU supports investments in quality education, including digital education at all levels taking a lifelong learning approach. Around digital, the GG, the strategy mentions working with partner countries in 'trustworthy AI' deployment, among other things ([EC 2021](#)). The Digital for Development Hub (D4D Hub) is the key part of European offer to digital transition in Africa. It brings together European actors working on various strands of digital transition that aim to jointly work towards human centric digital transformation. The D4D Hub has a working group on digital skills, but according to interviewees it has suffered from lack of widespread political interest. It is currently spearheaded by ENABEL (Belgium) and ESTDEV (Estonia) but it is searching for direction of travel. However, interviewees point out that the topic of AI in education has not frequently come up.

Further Team Europe efforts linking to AIED include [Regional Teachers Initiative for Africa \(RTIA\)](#) that also promotes some AI enabled solutions. Other initiatives such as Belgium's Teach2Empower programme in Tanzania, Rwanda and Uganda also integrate digital education tools ([Enabel 2024](#)). Furthermore, there are several initiatives making more indirect links, such as the Africa-Europe Digital Innovation Bridge 2.0 (digital entrepreneurship), the DIRECCT programme (enhancing e-learning and digitalisation in ACP regions), and the Multilateralism and Digitalisation II programme (promoting STEM education for women and girls) ([AFD 2022](#); [Chelapi-den Hamer 2024](#)).

Yet, Team Europe's influence on AIED goes beyond development cooperation programmes. The EU has supported the African Union's strategic work, including funding the Digital Education Strategy and Implementation Plan, helping to shape continental priorities. At the same time, the EU's own regulatory frameworks, most notably the AI Act and the GDPR, reinforce its position as a

global standard-setter. The AI Act introduces risk-based compliance requirements and reflects the EU's commitment to trustworthy, human-centric AI that protects safety and fundamental rights ([EC 2025a](#); [Csernatoni 2025](#)). While designed for the European market, such regulations have external implications: through the so-called 'Brussels Effect', EU standards can continue to shape approaches abroad ([Bologga 2025](#)). Furthermore, Directorate-General for Education, Youth, Sport and Culture (DG EAC), and the EU's Joint Research Service make key contributions in international fora. For instance, Digital Competence Framework for Citizens (DigComp) has served as a reference point for global actors, shaping key frameworks produced by UNESCO, and the World Bank. ([Domingo et al 2024](#)). The EU has also worked with OECD to develop an AI literacy framework for primary and secondary education ([EC 2025d](#)). Together, these strategic and regulatory contributions highlight the EU's ability to influence both the policy frameworks and the governance norms underpinning AIED beyond its borders.

Source: Authors.

Apart from addressing challenges in African education systems, economic, geopolitical and soft power considerations could also be drivers for more EU engagement in this sector. Investing in AIED in Africa can open new markets for software, and ed-tech products from donor countries. This could make AIED an attractive sector for innovative financing, and for attracting investments from the European private sector. It could also be important for the EU not to leave this field to major US or Chinese companies. China, the United States and the EU have different approaches to data access and protection, and the EU has an interest in promoting its own technologies and standards. For instance China has worked actively to expand its influence in UNESCO, and to use the engagement to promote its digital products and services internationally as well as to bolster both its global influence and domestic regime legitimacy ([Mochizuki & Vickers 2024](#)). The Beijing Consensus on AI and Education (2019), hosted by China, illustrates that Beijing uses UNESCO platforms to position itself as a global norm setter in educational technology, yet there is no evidence of Chinese influence on the content of UNESCO's guidelines.

In sum, international engagement in the African AIED space reflects a complex mix of developmental, normative, and geopolitical drivers. UN agencies have positioned themselves as key norm setters, balancing ethical guardrails with capacity-building and innovation, while institutions like the World Bank and bilateral donors approach AIED more pragmatically through market-driven, skills-oriented, or pilot-focused strategies. Yet, despite growing recognition of AI's

potential to address Africa’s pressing educational challenges, concrete donor engagement remains fragmented and often embedded within broader digital or education agendas rather than through dedicated AIED frameworks.

5. Way forward

5.1 Recommendations for African stakeholders

Address data gaps for evidence-based AIED: Governments should prioritise systematic data collection on the use of AIED in African schools and on the main providers of such tools through national statistics, in collaboration with research institutions and EdTech providers.

Build digital competencies among educators, and learners: Ministries of Education should integrate digital literacy, responsible AI use, and pedagogical applications of technology into teacher training curricula and continuous professional development programmes. This should also extend to students and parents—particularly in low-income and rural settings—through community outreach, mobile training units, and school-based workshops. Civil society can play a key role in co-designing accessible, age-appropriate materials for responsible AI use.

Match use of AI tools with digital skills and infrastructure: The governments should couple investments in AIED to investments in digital skills to empower users to engage meaningfully with AI tools, mitigate the risk of further deepening inequalities as a consequence of adoption of AI in education, and contribute to the development of a more inclusive and future-oriented education system.

Establish robust national AI and data protection frameworks: To date, 38 African countries have come up with data protection regulations, but several countries, particularly LDCs, have not regulated this space, leaving users of the AI in a vulnerable position ([Musoni & Okechukwu 2024](#)). Furthermore, only few countries have established strategic approaches to digital transition, let alone AI. There is thus a need for African governments to enact comprehensive national AI strategies. These frameworks should outline clear ethical principles—such as inclusion, justice, non-exploitation, transparency, and child rights—and define regulatory oversight mechanisms. Since many African countries still lack standalone AI laws, there is a need for countries to implement national guidelines and frameworks. Collaboration with continental actors like the AU and the African

Commission on Human and Peoples' Rights can help harmonise standards while respecting local contexts.

Invest in homegrown AI solutions and localised applications: Governments should reduce reliance on foreign tools by funding local edtech ecosystems. They should invest in startups, researchers, and developers working on culturally responsive AI, and tools aligned with national curricula. Governments can provide fiscal incentives, procurement opportunities, and sandbox environments to test applications, while prioritising long-term investment through seed funding, maintenance support, and public–private partnerships. African stakeholders should also back indigenous LLMs and edtech tools that reflect linguistic and cultural diversity, building on initiatives like Lelapa AI, Vambo AI, and the Mahlahle App.

Establish inclusive, ethical, and participatory AI governance mechanisms: Policy frameworks should include participatory platforms where teachers, students, parents, and civil society can influence how AI is used in education. Education ministries should ensure that AI regulation is not only rights-respecting but also shaped by those affected by its deployment.

AI developers and companies must also implement robust digital safety measures in all education technologies, including content moderation, parental controls, misinformation filters, and strong data protection features. Governments should enforce standards that prioritise student wellbeing and online safety.

To ensure AI tools treat all learners fairly, regulatory frameworks must require that AI systems are tested and continuously monitored for bias, particularly regarding gender, race, disability, and geographic origin. Developers should be encouraged or mandated to train models on diverse and locally relevant datasets to avoid replicating global inequalities.

Embed environmental sustainability and localisation in edtech design: Given the environmental costs of AI development—including energy and water use—African stakeholders should prioritise the localisation and adaptation of AI systems to reduce resource consumption and align tools with national priorities and infrastructure realities. Where possible, homegrown or adapted apps should replace resource-intensive imports.

Investment in digital public infrastructure: The availability of digital infrastructure, access to electricity, and affordable internet connectivity can hinder reaping the benefits of AI in educational settings in Africa. The effective

integration of AI requires robust technological infrastructure, which presents a significant challenge, especially in remote or underserved communities. Many schools, particularly in rural areas, face difficulties with unreliable or lacking internet access and outdated technology, risking the further entrenchment of educational inequalities. This lack of basic digital infrastructure severely limits the reach of AI education initiatives. Solutions include forming public-private partnerships to produce or import affordable devices, establishing community hubs such as libraries or training centers for shared access, and developing financing models that make device ownership more attainable without high interest rates.

Invest in small language models: Most African languages are part of the low-resource digital languages hence there is a need to invest in that space. These have shown promise for consumers using mobile devices in resource-constrained settings. Without first addressing this foundational challenge, AI education efforts risk deepening existing inequalities.

To successfully implement AI in education in Africa, efforts must therefore begin by bridging the significant hardware gap. While many Africans own mobile phones, far fewer have internet-enabled devices or access to computers—UNESCO reports that 89% of learners in sub-Saharan Africa lack household computers. In contexts where teachers and learners have access to the internet, it is mostly capped and limited—[data bundles](#).

5.2 Recommendations for European stakeholders

Consider formulating a clear approach to AIED in external action: While digital transformation in education is present in several EU's policy documents, and the EU has created internal guidelines on digital education and skills, there is no clear unified policy approach to AIED. Having a coherent strategic approach and a clear statement of intent could foster political commitment to work on AIED, bring clarity in what the EU wants to achieve, and how it will coordinate these efforts between DGs but also in Team Europe. The existing guidance note on digital education and skills already provides a foundation to build on, together with existing strategies and initiatives.

Ensure the availability of sufficient funding: If the EU wants to scale up its support to AIED in Africa and ensure it is presented in the sector, the EU also has to back the intention up with adequate financial investments. The proposed Global Europe Instrument has included some provisions on supporting education and digitalisation of African economies, which is already a good start. Supporting the

development and adaptation of AI in the education sector, while supporting the education access, quality and digital transition of partners, can bring important benefits to the European actors. Not only can it bring opportunities for European businesses but it can strengthen the EU's partnerships with African countries.

Invest in local innovation, particularly Africa-centric LLMs and edtech, while building on what's already there: The EU and its member states should invest in Africa-based AI R&D for education, prioritising LLMs adapted to local languages, curricula, and contexts. Support could include funding partnerships between African startups and European institutions, and promoting AI tools with offline or low-bandwidth functionality to ensure inclusivity. At the same time, new innovations should build on widely used platforms like WhatsApp or SMS to maximise reach in resource-constrained settings.

Leverage existing initiatives for championing digital cooperation in education: The D4D hub and digital skills working group could act as a key vehicle to drive European engagement in AI for education in Africa. Its focus should be extended from digital skills to AIED, and it should be strengthened to be successful. The working group is able to bring together European actors interested in supporting development and deployment of AIED and could from there act as a platform of cooperation and knowledge exchange.

Continue supporting responsible AI and data governance: The EU has previously supported the African Union in developing its continental frameworks like the AU Data Policy Framework and supported several African countries in developing their national AI and data strategies. With AI recognised as a strategic priority in the [AU Agenda](#) and reaffirmed at the AU-EU Ministerial in May 2025, there is momentum for deeper collaboration on innovation ecosystems, AI strategies and digital governance ([EC 2025](#)). The EU can build on this by offering regulatory support, sharing lessons from the EU AI Act, and engaging in knowledge exchange, capacity building, and partnerships. Cooperation should respect Africa's strategies while helping adapt regulatory instruments to local contexts. Unlike the EU AI Act's governance-focused tools, African can go further by embedding democratic participation and citizen empowerment in its frameworks ([Unver 2025](#)).

Promote ethical data governance and bias mitigation: The EU should help African partners develop ethical data governance for AI in education, including data protection for minors, educational data, and AI-specific risks. Support should cover anonymisation protocols, bias audits and safeguards for fairness, transparency, and explainability of AI tools. EU-supported projects must promote

diverse training datasets and continuous bias monitoring to prevent algorithmic discrimination.

6. Conclusion

AIED is a rapidly growing field in Africa. It holds great promise for transforming education in Africa by expanding access and quality for education. This study has looked at use cases of AIED in Africa to shed a light on how AIED is currently used in a variety of countries. The use cases illustrate a high level of ambition to take part in the digital transition in the continent. Most AIED applications reviewed by us focus on personalised learning and tutoring, but some also are designed for teachers, or for general administration.

The use cases also highlight the strong role of the private sector in innovation and development of AIED in Africa. While the private sector can fuel innovation, there are also tensions between profit motives and education as a public good. If market success is prioritised over educational impact, the potential with AIED may be lost. Furthermore if governments rely too much on private AIED providers, it may give companies and investors disproportionate control over education systems. The governments, on the other hand, need to balance between regulation and fostering innovation in the sector.

The study has also brought up a concern of a major gap in data on AI use in education in Africa. While there is some 'hype' on the AI in the education sector, and interviewed stakeholders brought up the perception of AI being increasingly used by learners, there is no hard data to provide evidence on how, by how many people and where AIED is used. This is a problem, because when there is no accessible and reliable data, the governments and international actors are not able to make well informed decisions and investments.

As a key partner for Africa, with a strong track record in supporting education as well as advanced regulatory approaches to AI, the EU can bring added value to African stakeholders in supporting the development of responsible AIED, and the connectivity and digital skills linked to its use. By supporting ethical development and use of AIED in the continent, while providing tailored solutions fitting to country contexts and needs the EU could foster a true partnership with African countries in the area where there is a strong mutual interest, and possibility to create broader societal good and advance education-related SDGs. This could be a true win-win-win solution to the EU, African governments, and at the end of the day learners and teachers.

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