Lefa AI

humanStudios

Building learners' awareness and capacity to engage safely, ethically and critically in the digital world

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EXECUTIVE SUMMARY

Technological advancements like Artificial Intelligence (AI) hold both risks and benefits for education. Learners' awareness and capacity to engage safely, ethically and critically in the digital world is therefore an important consideration and is the focus of this paper. As well as having the skills to access technology, learners need to be aware of and able to think about how they use it and for what. After an overview of the South African context, including access to devices and the internet, teachers' skills to support learners, and policy-practice gaps, the online safety of learners in South Africa is discussed with the views of learners themselves presented. Digital citizenship and agency are outlined as key attributes learners need to critically engage with the digital world, which includes AI. A diverse range of solutions and collaboration among stakeholders will be needed to ensure that learners develop the awareness and skills needed to navigate a fast changing world in which massive, rapid changes in technology are occurring and will continue to evolve. Central to this paper is that learners should be active participants in their own learning and have an environment that supports that. The paper concludes with recommendations on how to best support learners, create safe online environments for them and allow them the agency to engage with the digital world in responsible and ethical ways.

APPROACH

This is intended to be a hypercontextualised insights article that draws on a range of evidence (international but mostly local) to inform building South African learners' awareness and capacity to navigate the digital world. A literature review was conducted using academic articles, government reports, websites and non-governmental organisation reports. The literature review was supplemented by interviews with local AI-, technology- or online safety-experts to add contextual insights and supporting evidence in the form of quotes. The article focuses particularly on the learners – their awareness, capacity and agency in the digital learning environment. The scope of this article is school-aged children only, and therefore early childhood and post-school education were not considered. Learners' awareness and capacity to navigate the digital world is discussed, including digital skills (the use of technology) as well as higher-order thinking (critical engagement with AI).

EQUIPPING LEARNERS WITH SKILLS FOR THE FUTURE

The President of South Africa stated: 'Digital transformation in education is a non-negotiable if we are to adequately prepare today's learners for the workplaces, economies and societies of the future' (Republic of South Africa, The Presidency, 2026).

Sikhakhane et al. (2021) asserted that it is essential for learners to develop the skills needed to adapt to technological advancements and navigate the challenges that come with the fourth industrial revolution. As AI becomes more integrated into work systems, the demand for a digitally literate workforce is at an all-time high (Flatela & Funda, 2024). For learners, a lack of AI literacy can have an impact beyond schooling years (Flatela & Funda, 2024; Cross & Feldman, 2025). Lacking the skills sought by companies as they adopt AI limits learners' future employment prospects (Cross &

Feldman, 2025). Education systems thus need to take the skills needs of the future workplace into account, for example, the skills to critically evaluate AI content and to conduct human oversight over automated processes (Engeness & Gamlem 2025). According to Habibulloh (2026, 85) 'Learners are not only consumers of digital content but also active participants in digital ecosystems that shape social and environmental outcomes', requiring them to learn skills and competencies to navigate this changing space (Habibulloh, 2026).

As part of its curriculum strengthening process, the Department of Basic Education (DBE) has deeply engaged with what it means to prepare learners for a fast-changing world (DBE, 2025). Based on extensive consultations, which included obtaining high school learners' views on what they need to thrive in the future, the DBE developed the Basic Education Framework (DBE, 2025). The framework adopts a holistic view of learners and highlights that a range of competencies is needed to succeed in a fast-changing, digital world. It outlines the knowledge, skills, characteristics, attitudes, values, and cross-cutting priorities that will guide curriculum strengthening across the pillars of curriculum policy, assessment, teacher development, learning and teaching support materials and the learning environment (DBE, 2025). The specified skills include critical thinking and digital literacy; characteristics and attitudes include adaptability and resilience (DBE, 2025).

AI IN EDUCATION

In this article AI in education refers both to AI tools that can be used in learning (for example specific tools with settings that a teacher, school or company can set for the classroom but also tools like ChatGPT that a learner can be exposed to outside of the classroom) as well as the importance of AI literacy.

There are both benefits and risks to AI in education, for example the potential personalised learning holds but also the risk of cognitive offloading. While one can scarcely avoid engaging with technological advancements like AI, teachers and learners must be equipped to navigate the complexity this brings (Adorni, 2025; Cross & Feldman, 2025).

When considering building learners' awareness and capacity to engage with a digital world, including AI, it is key to first examine the digital environment of South African learners and what opportunities exist for them to use technology and develop digital skills.

SOUTH AFRICAN CONTEXT

Resource constraints

Countries like the United States and Singapore have demonstrated the value of including AI in education early on but in South Africa there are challenges that prevent this, for example, socio-economic limitations and teachers lacking the skills to empower learners (Flatela & Funda, 2024).

In a 2021 study, Sikhakhane et al. (2021) engaged with 30 Grade 10 and 11 learners from different socio-economic backgrounds in three schools in KwaZulu-Natal in which computers were available. Learners felt that computers helped them with their school work but that they had limited access:

> *We are not able to do everything we want to do because of the computer shortages; the lab was vandalised last year, so they stole laptops; in the municipal library you've to wait for a couple of hours before you even get the computer. When you book for the computer the time is limited, like 30 minutes. (Sikhakhane et al., 2021, page 5).*

The study found that across the schools, access to computers was a challenge due to the limited availability of computers in the schools, the distance and transport money required to travel to community venues where computers were available, and few learners having access to computers at home because of financial constraints, (Sikhakhane et al, 2021). Some learners came from families who could afford to have computers at home, which highlights the digital divide and that opportunities learners have to acquire digital skills can be affected by socio-economic factors (Sikhakhane et al., 2021). Although this study involved a small sample of schools and there are schools in South Africa, particularly in more affluent areas, that have access to the latest technology (Cross & Feldman, 2025), a lack of access to computers is still the lived reality of many learners in South Africa.

A teacher from Mpumalanga in a study by Mokoena & Seeletse (2025) stated:

> *Economic challenges make it hard for families to afford devices, and schools don't have resources to fill the gap. Teachers need ongoing support and training, not just one-off workshops, to become confident in using technology. We cannot ignore that some students are being left behind, and that raises serious ethical questions about fairness. (Mokoena & Seeletse, 2025, page 39).*

Accessing devices is just one of the challenges facing South African learners in acquiring digital skills. Barriers to uptake include poor connectivity, challenges with digital infrastructure and a shortage of teachers with the needed skills (Flatela & Funda, 2024; Mokoena & Seeletse, 2025; Phokoye et al., 2025). Additional challenges are the affordability of data, which prevent schools from uniformly benefiting from AI, limiting the scale at which it can be used to potentially improve learning outcomes (Phokoye et al., 2025).

Mokoena & Seeletse (2025) note that there have been initiatives in several African countries to distribute devices to all learners but they experienced a variety of challenges, for example lack of technical support once devices have been distributed (Mokoena & Seeletse, 2025). A South African solution will need to move beyond just the provision of devices and consider sustainability, like ongoing-support and contextual relevance to bridge the current divides (Mokoena & Seeletse, 2025).

Teacher skills

Benefitting from AI in education requires learners to have access to devices as well as the skills to use them (Cross & Feldman, 2025). Once barriers to access have been overcome, the skill of the teacher to support the learner in acquiring digital skills is a key factor in the uptake of AI in education. Teacher training remains a key driver of learners' acquisition of digital literacy (Flatela & Funda, 2024). Sikhakhane et al. (2021) found that learners felt a lack of support from stakeholders, for example school-governing bodies and the DBE, and that their teachers did not have the skills to support them to acquire digital skills, which points to a need for teacher training and capacity building.

Teachers in rural Eastern Cape, Limpopo, Mpumalanga and the North-West Province have reported gaps in digital skills and limited teacher development opportunities (Mokoena & Seeletse, 2025). Along with constraints in digital infrastructure, these gaps hinder teachers from using AI in teaching and learning (Mokoena & Seeletse, 2025). While AI is used in specific education tools and platforms,

freely available tools like ChatGPT are widely used, and teachers will have to equip learners with the skills to engage with such tools ethically and responsibly (Cross & Feldman, 2025). Thus for teachers to successfully integrate AI into education they need both technical skills and a good understanding of AI ethics (Saal et al., 2025). In a review of child online safety in South Africa, Kotze (2024) found that South African learners' digital literacy and online safety awareness is not up to standard due to teachers having limited training on providing guidance to learners.

It has also been found that short and once off teacher training activities did not have the desired skills development outcomes, and teachers are best supported through ongoing engagement like professional learning communities (Engeness & Gamlem 2025; Mokoena & Seeletse, 2025).

Injini (2026) argues that teacher onboarding and support in EdTech (use of digital tools and platforms to enhance teaching and learning) should follow a human-centred approach. EdTech implementation should be a deeply human process that focus not only on teachers' skills but also their psychological shifts in how they perceive their role (Injini, 2026). They caution against one-size-fits-all onboarding processes for teachers and suggest approaches that take the teachers' realities and context into account (Injini, 2026). Teachers should receive ongoing support to implement EdTech and school management should be engaged in the process to create a collaborative culture across the school and not a reliance on one 'champion' for tech adoption (Injini, 2026).

Policy gaps

The resource constraints and limited teacher development outlined above can often be linked back to policy gaps. Government policy is key in the roll out of digital literacy programmes, and policy should address infrastructure and the resources needed by teachers, learners and schools (Flatela & Funda, 2024). Gaps between policy and practice hinder AI adoption (Mokoena & Seeletse, 2025). That technology often evolves at a faster pace than administrative processes and ineffective collaboration between stakeholders (Mokoena & Seeletse, 2025) can further impede the adoption of AI.

Policy reforms are needed to ensure that AI policies are inclusive and that AI will be accessible across socio-economic groups and not widen existing gaps (Phokoye et al., 2025). Safe and ethical use of AI is not the responsibility of the school alone but provincial and national policies should be developed to support schools during implementation (Cross & Feldman, 2025).

The DBE recognised that there are gaps in policy and developed a Digital Education Strategy (DBE, 2026) which is currently going through approval processes. This strategy aims to address equal access for learners and teachers to digital resources and also provide opportunities for them to obtain the skills needed to use them (DBE, 2026). This will be a welcome development to close the practice-policy gap by not just focussing on providing devices to schools but also building human capacity needed.

Early benefits of AI

Although there are resource constraints, limited teacher skills and policy gaps there are still benefits to using AI in education in the South African context. Mokoena & Seeletse (2025) found that although rural settings are often marked by constraints, learners and teachers still show interest in and openness to adopting technology and AI. AI holds great potential for reducing educational gaps and improving learner engagement through personalised learning (Phokoye et al., 2025). For instance, AI could benefit learners in rural communities by providing personalised learning for learners in

multi-grade classrooms (Cross & Feldman, 2025); AI can support special needs education by adapting materials and learning to the specific needs of learners with disabilities (Saal et al., 2025); and AI in the form of online videos can be used to bring abstract descriptions (e.g. how a heart pumps) to life (Sikhakhane et al., 2021). These benefits can however only be realised if barriers like infrastructure limitations and digital inequity are overcome (Phokoye et al., 2025).

While AI has the potential to support mother tongue learning (Cross & Feldman, 2025), teachers in rural settings felt that digital learning platforms are predominantly in English, 'marginalising learners whose identities and epistemologies are rooted in indigenous languages and cultural frameworks' (Mokoena & Seeletse, 2025, page 43). Such contextual factors will have to be considered to unlock the benefits of AI for all South African learners.

ONLINE SAFETY

While barriers to accessing the online world and developing the skills to navigate this world exist in South Africa, there are however many learners who do have access to the internet, offering them great opportunities but also risks, including exposure to inappropriate content, grooming, cyberbullying, etc. (Basson, 2024). This raises the importance of child safety online that includes measures and practices that aim to protect learners from harm in the online world (Basson, 2024).

Save the Children South Africa's rapid evidence assessment found that learners mostly access the internet through phones (92% of households own at least one mobile phone), and 40% have unrestricted access to the internet (Basson, 2024; Kotze, 2024). Usage behaviours for learners change over time by starting out playing games or doing school work to accessing social network sites as they get older and develop more skills (Basson, 2024).

A study with South African learners aged 9 - 16 years in three peri-urban areas in Gauteng and one rural area in Limpopo indicated that around half of the learners accessed the internet daily and 59% of them did so on their own devices (Basson, 2024). The most common online activity was accessing social media. 46% of learners found it easy to report bad things that happen to them on the internet, while 32% reported that they found it difficult with the rest being unsure or preferred to not answer (Basson, 2024).

Research on Grade 8 -10 learners at a high school in a peri-urban area in KwaZulu Natal indicated that 50% of learners said they find it difficult to know who they can trust online (Basson, 2024). Children stated that parents and caregivers have an important role to play in keeping them safe online (Basson, 2024). In addition, learners felt that technology companies and the government were also responsible for their online safety and are currently not doing enough to keep them safe (Basson, 2024). The importance of having a trusted adult that one can talk to when an unknown person makes you feel uncomfortable online was highlighted (Basson, 2024).

A rapid evidence assessment of 132 publications (Kotze, 2024, page 5) found that 'Children consistently outperform their parents in all online safety skills'. In some cases, learners and parents were equally unsure about online safety, for example how to verify if a website can be trusted. (Kotze, 2024). Many parents felt that they needed more information on how to keep their children safe online (Kotze, 2024).

According to the Nelson Mandela Children's Fund (2025), learners stated that digital rights mean that you can safely use the internet, that the internet is accessible and inclusive, your privacy is guarded and that information is vetted before it is posted online (Nelson Mandela Children's Fund, 2025). They stated that these rights should inform digital policies in South Africa (Nelson Mandela Children's Fund, 2025).

Challenges arise in balancing children's rights to access information and protecting them from harm at the same time (Basson, 2024). A study with children aged 10-18 in South Africa, as part of the broader study with children from Australia, Cambodia, Colombia, Finland, Philippines, Kenya and South Africa, reported that learners see the benefit to connecting online with others and ask that they should not be prevented from interacting online as a risk-reduction strategy but rather request intervention from parents, technology companies, schools and government to ensure their safety online (Third et al., 2025).

It is necessary for policies to evolve to uphold children's rights to participate while ensuring their safety online (Basson, 2024). There is also a need to equip learners with knowledge on how to keep themselves safe online, particularly an understanding of what information is safe to share with people you do not know (Basson, 2024). Learners are calling for online safety education that is accessible to all children:

> *The children of this country are uneducated to the point that we become irresponsible online. We are unaware of certain policies and regulations, and the consequences of our reckless behaviour. We want the South African government to include online safety practices as part of our curriculum, to educate everyone on the dangers online so that we can learn from them. (Third et al., 2025, page 27).*

Learners have asked for a digital world where AI is safe and data protection, responsible device use and privacy is promoted (Nelson Mandela Children's Fund, 2025).

However, learners are often not engaged in the understanding of their rights when it comes to online safety (Basson, 2024). There is a need for school-aged, child-friendly materials that ensure learners understand legislation and policies (Basson, 2024), and there should also be meaningful child participation in shaping and adapting policies (Basson, 2024). In South Africa, meaningful child participation in advocating for policies and legislation is limited (Janse van Rensburg & Kok, 2023). Experienced organisations like Save the Children South Africa who have tested mechanisms and processes can be valuable stakeholders to ensure learner voices are included in a meaningful manner in policy and legislation (Janse van Rensburg & Kok, 2023) and that child-friendly materials are made available for the South African context that helps learners understand the risks and their rights (Janse van Rensburg & Kok, 2023).

DIGITAL CITIZENSHIP

Once barriers to access have been navigated and online safety considered, the focus shifts to digital citizenship and what capabilities learners need to navigate AI. Digital citizenship includes the knowledge, skills and attitudes needed to responsibly take part in the online world. So it is not merely about digital skills but about using judgement and acting responsibly (Habibulloh, 2026). Not all skills develop equally: According to Gonzales and Sanchez (2026), it has been found that learners' highest scoring skill in AI literacy was knowing how to change a prompt when they did not get the desired

response, and their lowest scoring skill was changing the AI draft to reflect their own voices and views. Both skills however fell in the moderate range (Gonzales & Sanchez, 2026).

Santika et al. point out that 'AI systems are only as fair and effective as the data on which they are trained' (Santika et al. 2025, page 66). The widespread use of AI in online information requires learners to have critical thinking skills that enable them to evaluate the accuracy of information they receive (Habibulloh, 2026). Researchers found 'a lack of consistent critical thinking when using these tools revealed a tendency toward cognitive offloading', where learners rely too much on AI and simply download information without using it as a problem solving or analytical tool (Gonzales & Sanchez, 2026, page 97). Critical thinking is linked to the ability to identify misinformation and disinformation online (Habibulloh, 2026).

UNESCO (2024) published an AI competency framework for students to serve as a guide to public education systems on how to support competency development in the roll out of national AI strategies. Education systems should be actively working towards shaping ethical and environmentally-friendly AI rather than just adapting to AI (UNESCO, 2024). A key principle of the framework is its human-centric approach that 'advocates that the design and use of AI should serve the development of human capabilities, protect human dignity and agency, and promote justice and sustainability throughout the entire AI life cycle and all possible human–AI interaction loops' (UNESCO, 2024, page 15).

Education institutions can play a critical role in ensuring that learners have the skills to engage with AI in an ethical way (Gonzales & Sanchez, 2026). Infusing digital citizenship into education promotes holistic competency development (Habibulloh, 2026). Digital citizenship encompasses ethical digital behaviour and understanding the consequences of online actions (Habibulloh, 2026). Ethical awareness further enables learners to recognise and critically engage with algorithmic biases (Habibulloh, 2026). Including digital citizenship in education can move learners from a passive to an active role where they can critically engage, share views and build confidence in navigating complexity (Habibulloh, 2026). To ensure AI supports digital citizenship, implementation of AI should be underpinned by ethical principles and an understanding of social implications (Santika et al 2025). Santika et al, assert that 'It is not enough to use AI to teach about the world; AI itself must reflect the kind of world we aspire to build—one that is fair, participatory and deeply human' (Santika et al., 2025, page 67).

The only way to ensure that learners are equipped with the skills they need for AI in education is to include these skills in the national curriculum (Flatela and Funda, 2024). An argument has also been made for the inclusion of digital citizenship in the curriculum to ensure learners have the competencies to use AI as a supportive tool responsibly and navigate the complexity this brings (Habibulloh, 2026). Education systems can support learners to better engage with the risks and challenges that AI poses if they promote ethical digital behaviour (Habibulloh, 2026). Digital citizenship education would foster learner's awareness of how their data gets used, their digital footprint, how algorithms work and privacy protection (Habibulloh, 2026). Digital citizens do not just have digital skills but can interrogate the design and governance of the systems they use (Adroni, 2025).

LEARNER AGENCY

There are different ways to integrate AI into the classroom, ranging from passive, controlled learning, to learner-centred and personalised learning to learner-led learning that promotes agency (Cross & Feldman, 2025). Due to the rapid advancements in technology, it has become critical to develop digital agency. 'Digital agency is fundamentally predicated upon the capacity of individuals to exercise intentionality, autonomy, and reflexivity in their interactions with digital technologies' (Engeness & Gamlem 2025, page 1). A good learning environment is more than just access to technology but should also develop learner agency at the same time, including autonomy and self-regulation (Engeness & Gamlem 2025). Moreover, AI is not just another tool but changes cognitive work to 'hybrid human-AI workflows', and this poses the challenge of how one retains human agency (Adroni, 2025, page 1).

Digital agency is broader than digital skills and includes competencies like critical thinking. Passey et al. (2018) states that digital agency consists of digital competence, digital confidence and digital accountability. It promotes meaningful engagement with technology that enables users to act in their own interest (Passey et al., 2018). Without the development of agency, learners risk being passive users rather than engaged in digital content (Adroni, 2025; Engeness & Gamlem 2025). In addition, users of AI do not have the power to remove the bias inherent in AI, and therefore it becomes critical to empower learners to critically engage with this bias when using AI (Cross & Feldman, 2025). Project-based learning and inquiry-based learning are effective ways of encouraging digital agency since they require learners to play a more active role (Engeness & Gamlem, 2025).

All learners, including those from marginalised groups should have the opportunity to develop digital agency (Passey et al., 2018). If not, then inequalities that exist offline will continue in the online world (Passey et al., 2018). Digital agency should be seen and supported as a life-long learning skill because technology will keep evolving and surface new competencies that are needed to adapt to these changes (Passey et al., 2018).

Learner's development of digital agency greatly depends on the competencies of teachers, and this signals the importance of both pre- and in-service teacher training (Passey et al., 2018). Teacher agency includes skills like the ability to adapt pedagogic strategies and critically evaluate digital resources, and teacher training is needed to support the development of these skills (Engeness & Gamlem 2025). Teacher agency is more than the use of digital tools but includes a broader application of the knowledge and skills that impact the school environment, for example, school policies (Engeness & Gamlem, 2025). It must also be acknowledged that teaching and learning rely on social interactions that AI cannot create (Cross & Feldman, 2025).

There is a need in South Africa for more research on how learners use AI and what support they need to use AI ethically and responsibly (Cross & Feldman, 2025).

A MULTI-LAYERED APPROACH TO DIVERSE SOLUTIONS

Digital solutions with evidence of preparing learners for the future world of work will have to be adapted to suit uniquely South African challenges. Moreover, research on Africa often does not take social and cultural aspects into account because it is conducted by other researchers on other continents (Cross & Feldman, 2025). A broader approach to and investment in digital education is needed that includes adequate infrastructure, relevant teacher training and AI tools that take local languages and cultures in account (Mokoena & Seeletse, 2025). It will also be important to include the

rural perspective in the development of the usage of AI to ensure that existing divides and inequalities in South Africa are not exacerbated (Mokoena & Seeletse, 2025). A South African solution will require the collaboration of a wide range of stakeholders and will have to hold the tension between education being for the public good and corporates monetising education (Cross & Feldman, 2025). It is key for developers, policymakers, teachers, learners and communities to collaborate to ensure the development of AI tools for education is culturally sensitive and grounded in sound ethics and pedagogy (Santika et al., 2025).

Public-private partnerships hold the potential to promote AI digital literacy through collaboration on multiple levels (Flatela & Funda, 2024). The government, non-governmental organisations (NGOs), school communities and companies should work together to promote digital equity where everyone can develop digital agency (Passey et al., 2018). Awareness campaigns are needed to inform schools parents and communities of the value of AI digital literacy (Flatela & Funda, 2024).

SOUTH AFRICAN VOICES

AI has been in use in education for over 30 years but the release of ChatGPT to the public in 2022 led to rapid advancements and other products coming onto the market. Simultaneously, education systems were confronted with the implications of these developments for education and how to respond (Cross & Feldman, 2025). This section aims to support the evidence above and capture the voices of South African experts on AI, online safety and learner agency. This is not meant to represent the views of the nation or an extended expert consultation but rather provide a glimpse of what can be possible in the South African context and ways to approach an uncertain future. Ten key insights were highlighted and supported by the voices themselves.

1. Building peer-support systems can be powerful to create safe spaces for learners to talk about their online experiences.

> *Looking at the risks and then taking the knowledge that children are more likely to speak to other kids than their parents and we also take a narrative therapy approach...So we created digital school clubs that are peer support systems. (Jenna-Lee Strugell, Tales of Turning)*

2. Learners are best placed to describe their needs and they should be included in designing online safety solutions that are meaningful to them and not asked to follow arbitrary rules.

> *So whoever we work with, whether it be communities or individuals or children, they are the experts of their own lives. And we obviously researched other interventions and a lot of them are telling children what to do, don't do this, do this - no human responds well to being told what to do and particularly children. (Jenna-Lee Strugell, Tales of Turning)*

3. AI training and capacity building will need to be an ongoing process for teachers and learners due to the speed of advancement.

> *The critical element is the ongoing training that people need to receive, and I emphasise ongoing, because EdTech (and) AI is moving so quickly that we're constantly catching up and so unless we have refreshers... If we think the norm, we'll give someone a training on it and then in two years time we might do a refresher. The EdTech world is moving far quicker than that. (Dr Craig Gibbs, JET Education Services)*

4. Rigid and punitive approaches to learners' online use is not effective and a better approach is to work together with the learners and other stakeholders to capacitate the learner to navigate the digital world.

> *What I've found in my discussions in webinars with teachers and lecturers, especially in Africa, is that they will revert to a very rigid approach...because it protects them and so they'll sit and go: we are going to have restrictions, we're going to be punitive, we're going to prevent certain things from coming into the school. Now that's a naive approach... because you will then spend all of your time policing and I can guarantee you that it's like a sieve - it will just flow away from you. You'll lose control. What you need to do is move towards a more sophisticated element (of) bringing the youth in, where you're bringing the parents in, where you're informing them. (Dr Craig Gibbs, JET Education Services)*

5. Learners should be made aware of online risks and a safe environment needs to be created where learners can develop their agency, speak up without judgement and learn from online mistakes.

> *For me, the key principle is making them aware of what is out there and the risks they could face. You can only ringfence and police for that long - it's about building awareness so they feel comfortable speaking up when they do stumble upon it. We don't want them to hide it because sometimes it isn't their fault either. It shouldn't be about assigning blame. It's creating a comfort zone where the child can speak openly when exposed to malicious content. (Oliver Dick, Injini)*

6. Giving children agency to choose their trusted adult to support them in navigating the digital world can normalise asking for help and learning from mistakes rather than being scared or feeling ashamed.

> *And then of course, adults also need to be involved. So instead of us saying these are the adults that are going to be in charge, they (learners) identified their trusted network of adults and who in the school they wanted to approach to be part of the (peer support) mechanism. It is encouraging children to reach out... for help from a trusted adult because obviously a lot of times children feel like they've made a mistake online or they feel shame or that they're going to be punished. (Jenna-Lee Strugell, Tales of Turning)*

7. AI in education is not about reinventing the wheel. It has brought many new elements but we should also apply the knowledge we already have, for example how learning happens.

> *I think there are several things about AI that we assume: AI is new and novel and that we need to test all of these things again. But I also feel like a lot of things we know about education and how learning takes place, that you can actually apply to these contexts. For example, cognitive psychology tells us that there has to be an element of struggle and that you're not going to actually learn anything without that struggle. (Alexei McGregor, Injini)*

8. The risks children can be exposed to online create fear but this can be mitigated by supporting parents and teachers to build agency in children.

> *People are panicking and rightfully so. I don't blame them for panicking. It's very scary. In the panicking, people don't have hope or a lot of parents have been telling me (they have) been going to these talks and it's terrifying, of all the risks and how bad it is but no one's giving them something they can actually do that gives children agency as well. (Jenna-Lee Strugell, Tales of Turning)*

9. Digital citizenship should promote learner responsibility, good behaviour and habits that promote wellness.

> *Creating a sense of responsibility and their contribution to the realm rather than telling them what not to do, but getting them to focus on the areas that would help them reach their goal in the easiest, most helpful fashion. And then just how to be – I want to say good people for a lack of a better term, but just good people – on the internet and how to contribute positively, what is positive contribution, what is negative contribution as well as what are healthy habits when it comes to device usage. (Oliver Dick, Injini)*

10. Careful consideration should be given to how we use AI in education by following a human and problem first approach as opposed to a technology first approach.

> *I have seen a lot of people that are following a technology first approach with not a problem first approach to AI and using AI more. Again they get excited by AI and they're like 'what problems can we fix with this?' as opposed to saying 'what's the problem...and the best way to fix those problems?', which seems like a thing to really get stuck on but I do think it leads to products being designed very differently and the thought process going [on], and it leads to a high difference in what products are getting designed." (Alexei McGregor, Injini)*

CONCLUSION

In the South African context, there are barriers to learners developing digital skills but efforts are being made to bridge the digital divide and apply uniquely South African solutions. While schools experience challenges providing learners with access to devices, many learners are however online, even if just by means of a cell phone. The online world, including AI, holds opportunities for learners but also risks. A key message is that learners need to develop a holistic set of skills that they will need to navigate the fast-changing world and new waves of technological advancement. The basic education system should provide opportunities for learners' holistic development, for example, by infusing critical thinking into the curriculum and assessment. Learners should not be passive users of digital tools like AI but should develop the skills and agency of digital citizens, allowing them to benefit from these tools in a safe and ethical manner. For learners to have equal access to digital tools and develop the awareness and capabilities they will need to use them, support from a wide range of stakeholders including schools, teachers, parents, government, NGOs and technology companies is needed. Of these stakeholders, teachers remain a key lever for the development of learners' digital skills and should be supported through on-going teacher development. Learners should be included as partners in the development of the guidelines, curriculum and policies that guide their online learning and development as digital citizens. Global evidence on international best practice can be leveraged but care should be taken to adapt the various approaches to the South African context.

CONSIDERATIONS AND RECOMMENDATIONS

1. Digital and AI solutions in education should be human-centred, evidence-led and contextualised for South Africa to address our specific barriers but also promote what is important to us as a nation.
2. Teachers are a key lever for building learners' digital capabilities but this requires on-going teacher development. In support of the teacher, schools, families and communities should build supportive peer and trusted adult structures for learners where they can disclose

challenges they encounter or mistakes they make in the digital world without shame or punishment.

3. Learners should be equipped with a holistic set of competencies, for example critical thinking, digital skills and agency, to navigate the fast-changing world of technology, including AI, that will continue to evolve in unanticipated ways with successive technology waves. The development of these competencies should be intentionally infused in the school curriculum.
4. Learners want to be online but they want to be safe. Online learner safety is a collective responsibility that should be taken up by schools, parents, government, technology companies and learners themselves to ensure learners are well informed and have channels to access support. Child-friendly material, campaigns and media should be used in schools to guide learners and build capacity to harness the benefits of technology like AI but also protect learners against the risks.
5. Learners are best placed to understand their needs and there should be meaningful child participation in developing schools' digital policies as well as national legislation and policies, rather than enforcing punitive rules on them or policing them.

REFERENCES

Adorni, G. (2025). Cyber humanism in education: Reclaiming agency through AI and learning sciences (arXiv:2512.16701). arXiv. https://doi.org/10.48550/arXiv.2512.16701

Basson, L. (2024). Child Safety Online in South Africa: Position Paper. Save the Children South Africa.

Cross, S., & Feldman, J. (2025). Artificial intelligence in education: Considerations for South African schooling. Journal of Education, (98), 27–41. https://doi.org/10.17159/2520-9868/i98a02

Department of Basic Education. (2025). Improving learning outcomes through curriculum systems strengthening (Draft Discussion Document). Department of Basic Education, Republic of South Africa.

Department of Basic Education. (2026). The Digital Education Strategy – a new roadmap for digital transformation in schools. Retrieved from https://www.education.gov.za/ArchivedDocuments/ArchivedArticles/TheDigitalEducationStrategy.aspx

Engeness, I., & Gamlem, S. M. (2025). Agency in digital education: Empowering students and teachers in technology-rich learning environments. Education Sciences, 15(8), 1051. https://doi.org/10.3390/educsci15081051

Flatela, A. B., & Funda, V. (2024). Enhancing AI digital literacy among South African youth: A model for inclusive participation. In Proceedings of the 3rd International Conference on Emerging Technology and Interdisciplinary Sciences (ICETIS 2024) (pp. 143–149). Jozac Publishers.

Gonzales, J. M. S., & Sanchez, A. S. (2026). AI literacy and digital citizenship competence of senior high school social studies students in Sta. Rosa City: Basis for a technology-driven civic learning framework. International Journal of Advanced Engineering, Management and Science, 12(3), 87–99. https://doi.org/10.22161/ijaems.123.8

Habibulloh, M. (2026). Digital citizenship education to support sustainable development competencies in the era of artificial intelligence. Proceeding International Conference on Multidisciplinary Engagement, 1(1), 85–97.

Injini (2026), African EdTech Insights Report, Volume 4. “When Technology Meets the Classroom: What It Takes for EdTech to Succeed”. South Africa.

Janse van Rensburg, M. & Kok, N. (2023). Save the Children Child Safety Online Legislation and Policy in South Africa: Rapid Evidence Assessment

Kotze, M. (2024). Child Online Safety in South Africa: A rapid evidence assessment. Save the Children South Africa.

Mokoena, O. P., & Seeletse, S. M. (2025). AI in rural classrooms: Challenges and perspectives from South African educators. International Journal of Current Educational Studies, 4(2), 30–52. https://doi.org/10.46328/ijces.199

Nelson Mandela Children’s Fund. (2025). NMCF Children’s Recommendations for the Digital Justice Summit (Stellenbosch)

Passey, D., Shonfeld, M., Appleby, L., Judge, M., Saito, T., & Smits, A. (2018). Digital agency: Empowering equity in and through education. Technology, Knowledge and Learning, 23(3), 425–439. https://doi.org/10.1007/s10758-018-9384-

Phokoye, S. P., Epizitone, A., & Moyane, S. P. (2025). A review of emerging AI technologies in education: Challenges and benefits in South Africa. International Journal of Research in Business and Social Science, 14(7), 528–536. https://doi.org/10.20525/ijrbs.v14i7.4374

Republic of South Africa. The Presidency. (2026). Opening remarks by His Excellency Cyril Ramaphosa, President of the Republic of South Africa and Co-Chair of the SDG4 High-Level Steering Committee Leaders Group Meeting, Room X, UNESCO Headquarters, Paris, France. https://www.thepresidency.gov.za/opening-remarks-his-excellency-cyril-ramaphosa-president-republic-south-africa-and-co-chair-sdg4

Saal, P. E., Chetty, K., Ntshayintshayi, N., Moosa, T., & Masuku, N. (2025). A scoping review of the integration of artificial intelligence in primary and secondary schools from 2020 to 2024: Policy implications for South Africa. Journal of Education, (98), 62-85. https://doi.org/10.17159/2520-9868/i98a04

Santika, I. G. N., Kandia, I. W., Sila, I. M., Wanda, Y., & Darnis, Y. (2025). Empowering global citizens in the digital age: The role of AI in advancing equity and ethics in education. *Proceedings of the 5th International Conference on Social Sciences and Education (ICSSE 2025)*, 64–69.

Sikhakhane, M., Govender, S., & Maphalala, M. C. (2021). The extent of South African schools' preparedness to counteract 4IR challenges: Learners' perspectives. Journal of E-Learning and Knowledge Society, 17(1), 1–9. https://doi.org/10.20368/1971-8829/1135265

Third, A., Kennedy, Ü., Lala, G., Rajan, P., Sardarabady, S., & Tatam, L. (2025). *Protecting children from online grooming: South Africa snapshot*. Young and Resilient Research Centre, Western Sydney University; Save the Children.

UNESCO. (2024). AI competency framework for students. United Nations Educational, Scientific and Cultural Organization. https://doi.org/10.54675/JKJB9835