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Artificial intelligence

Do we still need to think?

- **Sweden:** the unmet promises of the digital classroom
- **African languages,** the blind spot of AI
- Parenting by prompt in **India**



OUR GUEST

Interview with
Kamome Shirahama,
Japanese manga artist

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Editorial

In only a few years, generative artificial intelligence (GenAI) has overturned long-held convictions about learning, the transmission of knowledge and the uniqueness of the human mind. It has forced its way into classrooms, in a sense, like a high-tech cheating aid producing perfectly structured assignments that are full of scholarly references — but completely unrelated to students' genuine abilities. Teachers have gradually realized the power of this new tool, which not only allows access to an infinite amount of content but also enables its creation.

Today, the issue is no longer as much about catching cheats as it is about deciding what role to assign to this increasingly high-performance technology in our so-called "knowledge" societies. Generative AI has already significantly transformed teaching practices, with numerous teachers now prioritizing oral communication and in-class study over homework. But while GenAI opens new prospects, many are concerned about its impact on the cognitive development of its users.

UNESCO has played a pioneering role by establishing, as early as 2021, ethical principles and recommendations to ensure that AI truly serves humankind. The Organization published the very first *Guidance for Generative AI in Education and Research* in September 2023, along with several competency guides for students and teachers.

The Organization emphasizes the crucial role of learning. In a world saturated with data, true competency lies more than ever in the ability to understand, analyze, organize, and give meaning. Without this ability, how can we preserve the fundamentals of individual autonomy, free will and, by extension, freedom? How can we manage our dependence on technology if we use it as a substitute for our creative or intellectual faculties?

Learning, reflecting, and thinking also mean growing as a human being, cultivating curiosity, sociability and critical thinking. And no machine, no matter how powerful, can claim to fulfill all of these roles.

Agnès Bardón
Editor-in-Chief

Artificial intelligence: Do we still need to think?





Now capable of writing a report or solving a complex equation, generative artificial intelligence is seen by some as a revolutionary tool that will transform the way we learn, while others fear it could lead to cognitive decline in future generations. One thing is certain: education, which also serves to socialize and develop critical thinking, remains irreplaceable.

The idea that emergent technologies could replace learning is not new. In classical times, Socrates (in Plato's *Phaedrus*) argued against a key early technology — writing — which he saw as displacing learning; in the mid-18th century, the Enlightenment philosopher Jean-Jacques Rousseau argued that books would do much the same. More recently, similar claims were made for the internet: why do we need to learn when search engines give us immediate access to the world's knowledge via our mobile phones? Yet teaching and learning has more or less carried on, influenced by these technologies, but not made redundant by them.

With artificial intelligence (AI), the first technology to intentionally and convincingly imitate humans, becoming ever more embedded in daily life, the question has resurfaced. If generative AI technologies can “write” essays, “solve” complex equations, and “code” better than most people, do we still need to learn?

Anyone with an interest in education cannot have failed to notice the recent enthusiasm for the educational “potential” of AI. Triggered by the arrival of generative AI, multiple international reports, notably those published by the Organisation for Economic Co-operation and Development (OECD) in 2026 and by the World Bank in 2025, along with many ministries of education, have declared that these new technologies are poised to free teachers from routine tasks, prepare students for uncertain futures and personalize learning — at least, that's what the reports mostly say.

“Intelligent” tutoring systems

In reality, education has long since dabbled with AI. Although AI might seem a recent entrant to the world of education, “AI in education” has been an active research field for almost fifty years. A little over ten years ago, it emerged from the laboratories to be deployed in classrooms around the world →



— principally in the form of “intelligent tutoring systems”, a misleading title because they are not intelligent in any meaningful sense. These AI-mediated systems aim to make one-to-one tuition, thought to be more effective than group tuition, available to every learner. In other words, they are designed to automate some teacher functions, which inevitably means automating some aspects of learning.

This example is instructive — because of what it excludes. As explained by philosopher Gert Biesta, professor of public education at Maynooth University, learning is actually only one of three distinct yet overlapping functions of education. In addition to learning (the acquisition of knowledge, skills and dispositions — which Biesta calls “qualification”), there is “socialization” (the process by which we find our place in particular social, cultural and political groups); and there is “subjectification” (how we become individuals capable of thinking independently and taking responsibility for our own lives).

Given that AI tools in education rarely, if ever, address the socialization and subjectification functions of education, it seems clear to me that education is

still fundamentally needed. Hence, the question returns to learning. If generative AI is so powerful, if it can replace the need to get information (facts that we ask it to provide) and to do things (such as generate an essay), do we still need to learn?

Biases and blatant errors

The outputs of text-generative AI are — at least initially — impressive. They are fluent and appear to be factual and even definitive. However, it is well-known that these outputs are full of biases and plausible-sounding nonsense. This is mainly because generative AI has been trained on text scraped from the internet, including all its inaccuracies, biases, and obscenities. It is also because of how generative AI works. As remarkable as the results might seem, they are only predicting the most probable output based on their training data (the internet) and on the given input (the prompt). Sometimes this works well, other times it fails spectacularly. Either way, generative AI has no understanding of any truth.

Students must be encouraged to see AI outputs for what they are. Yes, these systems might generate what

appears to be useful information, but that “information” cannot be trusted. Accordingly, rather than learning becoming unnecessary, students also now need to learn how to critically interrogate the outputs.



AI says nothing about what makes us responsible members of society, one of the essential missions of education

But even when the outputs do correlate with reality, what is the impact of using generative AI on student learning? Recently, several metanalyses of scientific

Global survey on AI in higher education

Nearly two-thirds of higher education institutions already have guidelines on artificial intelligence or are in the process of developing them. This is one of the main findings of a global survey conducted by UNESCO among 400 UNESCO Chairs and UNITWIN university networks in 90 countries, the results of which were published in September 2025.

AI is now widely integrated into higher education practices. Nine out of ten respondents report using AI-based tools, mainly for research and writing. Nearly half are also experimenting with them in teaching — course planning, grading assistance, plagiarism detection — while others are

using them for administrative or professional development purposes.

This rapid acceptance, however, comes with limited confidence. More than half of those surveyed say they are uncertain about the real usefulness of AI in teaching or research. A quarter of institutions report having already encountered ethical issues, ranging from excessive student reliance on AI tools to disputes over authorship of publications and bias in scientific research.

While 19 per cent of institutions have adopted a formal AI policy, 42 per cent are currently developing a guidance framework.

Regional dynamics vary: nearly 70 per cent of institutions in Europe and North America have or are preparing guidelines, compared to 45 per cent in Latin America and the Caribbean. In this context, some of the policies put in place include the introduction of a compulsory introductory course on AI in the first year.

Launched in 1992 to promote international inter-university cooperation, the UNITWIN/ UNESCO Chairs programme comprises some 1,100 Chairs and 50 networks in 130 countries.

Guardrails for education in an algorithmic age

Invited to speak at UNESCO on the occasion of World Futures Day in December 2025, French philosopher Eric Sadin warned against the consequences of the “civilizational rupture” represented by generative AI. These consequences are already appearing in the classroom, which is why UNESCO stresses the need for education to remain human-centred.

This approach is reflected in various initiatives and publications, such as the recent anthology, *AI and the future of education: Disruptions, dilemmas and directions* (2025), which explores the philosophical, ethical, and pedagogical dilemmas posed

by the influence of AI in education.

The Organization also develops and maintains a normative framework designed to help countries, policy-makers, and education systems keep pace with the rapid technological shifts. In 2024, UNESCO released AI competency frameworks for students and teachers to promote safe, ethical, and responsible engagement with the technology.

These frameworks define essential skills for educators as well as curricular goals for students. They are based on the idea that AI should support, rather than replace, human decision-making and intellectual development.

UNESCO recommends incorporating these standards into national policies and curricula.

These resources align with the principles outlined in the first-ever global *Guidance on generative AI in education and research*, published in September 2023, where UNESCO called on governments to establish regulations and address the disruptions caused by these technologies. This guidance complemented other key standards, including the *Recommendations on the ethics of Artificial Intelligence* and *AI and education: Guidance for policy-makers*, published in 2021.

articles about the impact of ChatGPT (a leading generative AI tool) on learning have been published.

While these particular studies all claim that ChatGPT enhances academic performance, their conclusions are contested. Neuroscientist Jared Cooney Horvath points out that each of them fails to uphold basic standards in terms of study selection, methodological rigour and statistical integrity. In other words, despite their positive conclusions, these meta-analyses give no reliable evidence that generative AI has a positive impact on academic performance. Instead, it is more accurate to conclude that it had more or less no impact on learning at all.

Cognitive crutch

But it gets worse. An earlier study, undertaken in Türkiye in 2024, also explored the impact of ChatGPT on academic performance. This study involved almost a thousand students divided into two groups; one group was given access to ChatGPT, while the other had no access to any technology. What the researchers found was that access to ChatGPT did improve student performance — but only while the students had access to it. When the access was taken away, the students performed worse than those who never had access in the first

place. In other words, this research concluded that, while ChatGPT might act as a “cognitive crutch”, it inevitably undermines learning. Students become over-reliant and the real impact on learning is negative.

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The use of AI might lead to diminished long-term memory and weaker cognitive capabilities

This conclusion is supported by an American study from the Massachusetts Institute of Technology (MIT), which used electroencephalography (EEG) to record participants’ brain activity in 2025. Again, the participants were divided into two groups. The researchers similarly concluded that the participants who used generative AI “performed worse than their counterparts in the non GenAI group at all levels”. Put another way, the use of this technology might actually lead to

what has been called “cognitive atrophy”, involving diminished long-term memory and weaker cognitive capabilities.

Critical spirit

When considering the use of generative AI in education, there are multiple other issues that should be considered. These include the back-door commercialization of what most believe should be a public good, as education becomes increasingly dependent on proprietary technologies; the impact of AI systems on the environment (including the growing demands for unprecedented amounts of energy and water); and the flipped digital divide (in which students from higher socio-economic groups continue to have access to teachers, while those less advantaged increasingly have to make do with computers).

Finally, with generative AI becoming ever more present, I would argue strongly that yes, we still need to learn. Not just our students, but all of us need to embrace the hard work of learning. In addition to learning what we wish to learn, we need to put effort into learning the profound limitations of AI, take into account its broader impacts on human rights, social justice and the environment, and, perhaps most importantly, learn how to think... critically. ■

Sweden: the unmet promises of the digital classroom

After decades of pushing screens into the classroom, Sweden is shifting course. An all-digital policy that often prioritized technology over pedagogy has ultimately fallen short of its promise.

This year, Marie Gellertz gave her students an unusual Christmas gift: new textbooks. Their reaction caught her off guard. “Everyone wanted them,” she says. “They loved the smell of new books.”

Gellertz has taught Swedish literature and social sciences since 1999 and now works at Uppgårdskolan, an elementary school outside Stockholm. For this teacher, who has spent much of her career navigating Sweden’s rapid shift toward digital classrooms, the current enthusiasm for books comes as something of a surprise. For years, buying new books was all but abandoned, driven by cost-saving policies and a focus on new technologies. “Before, if you questioned digitalization, you were seen as old-fashioned,” she says.

Sweden was indeed an early mover in the use of screens in school: digital competence entered the national curriculum in 1994, followed by large-scale laptop programmes from the late 2000s. By the mid-2010s, the one-device-per-student policy had become common, especially in cities.

But that has now changed. After decades of expanding screen use in school, Sweden is reassessing its approach. From 2024, the government started subsidizing textbooks, with SEK 555 million (roughly €52.5 million) allocated annually from 2026. Schools must also provide staffed libraries, and mobile phones will be banned during the school day starting next year.

Back to basics

The move back to basics was grounded in evidence from research. International studies, such as the OECD’s Programme for International Student Assessment (PISA) from 2012 to 2022, show that in Sweden, the one-to-one laptop policy did not improve results and had small negative effects in maths among students from less-educated backgrounds. The results highlighted that access alone does not improve learning. Moderate, purposeful use helps, while heavy use can correlate with lower performance.

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In Sweden, the one-to-one laptop policy did not improve results

Another pitfall: this all-digital policy has tended to concentrate funding on hardware rather than on pedagogy or teacher training. In practice, digital tools have often added to the workload rather than reducing it. Joel Starkenberg, a former IT professional turned maths and science teacher who also teaches at Uppgårdskolan, sees the trade-offs daily.

“In theory, computers and digital teaching materials could be a fantastic tool in the individualization that is expected,” he says. He points to their ability to “read text aloud, change the size of the text, change contrast, show films, practise with digital flashcards, provide personalized lesson plans, create quizzes, and presentations”. However, he cautions, “most pupils are unable to use computers without dividing their focus between playing, chatting, and studying”. The result is fatigue and “substandard learning,” particularly for weaker students. “It’s a shame, because I know that when it works, they benefit greatly.”

Paradoxically, despite the heavy emphasis on digitalization, four out of ten Swedish students failed to achieve a basic level of digital competence in 2023, according to a study by the International Computer and Information Literacy Study (ICILS). “Digital competence requires that students have basic skills, such as reading, writing, and arithmetic. The school must prioritize correctly; we must focus on basic skills first, before students can develop digital competence,” Education Minister Lotta Edholm commented on the findings in 2024.

Support tailored to students’ needs

For Christina Löfving, Ph.D. and Senior Lecturer at the University of Gothenburg, the issue is structural. Digital competence →



has long been expected across all subjects, but “the concept is rather vague, with no specific syllabus or any requirements.” She says that, in practice, teachers address it on a case-by-case basis when problems arise. As she puts it, “the support system seldom takes a bottom-up perspective”.

She also warns that educational platforms are quietly reshaping teaching. She describes this as “platform bureaucratization”, which she fears may eventually reduce teachers’ autonomy and professional judgement.

The challenge, according to Christina Löfving, is not technology itself but how it is implemented. Without clearer direction, students risk being “left on their own, or taught ad hoc and differently by different teachers”.

She argues for a more structured approach: clearer curriculum requirements, national training for teachers, and time for collaboration where they can share responsibilities and negotiate how their common students can benefit. Crucially, support must be grounded in classroom reality, with the focus always remaining on what the students actually need.

Yet, it would be a mistake to frame this as Sweden turning away from digital tools. Most teachers have incorporated them into their practice and use them to complement their teaching. After years of expansion, the system is coming up against an obvious fact: no technology, however powerful, can transform education on its own. ■

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Most pupils are unable to use computers without dividing their focus between playing, chatting, and studying

Cell phones expelled from school

In many countries, smartphones are gradually disappearing from classrooms. Public policies aimed at limiting their use in schools are on the rise. According to UNESCO’s 2023 *Global Education Monitoring Report (GEM)* on technology in education, 24 per cent of countries have implemented restrictions on cell phones in schools. The most recent data show rapid progress: today, 52 per cent of countries have policies limiting their use in schools.

This trend reflects the growing fears of parents, teachers and policy-makers regarding the potentially negative impact of phones and social media. Areas of concern include learning, social interactions, sleep, mental health, cognitive abilities and privacy.

The presence of a smartphone in the classroom can disrupt learning. A meta-analysis of research covering 14 countries and all levels of education shows a negative effect on academic performance, which is more pronounced in higher education. Another study indicates that after a distraction, it can take up to 20 minutes for a student to refocus. Conversely, banning smartphones in Belgium, Spain and the United Kingdom has improved academic performance, particularly among lower-achieving students.

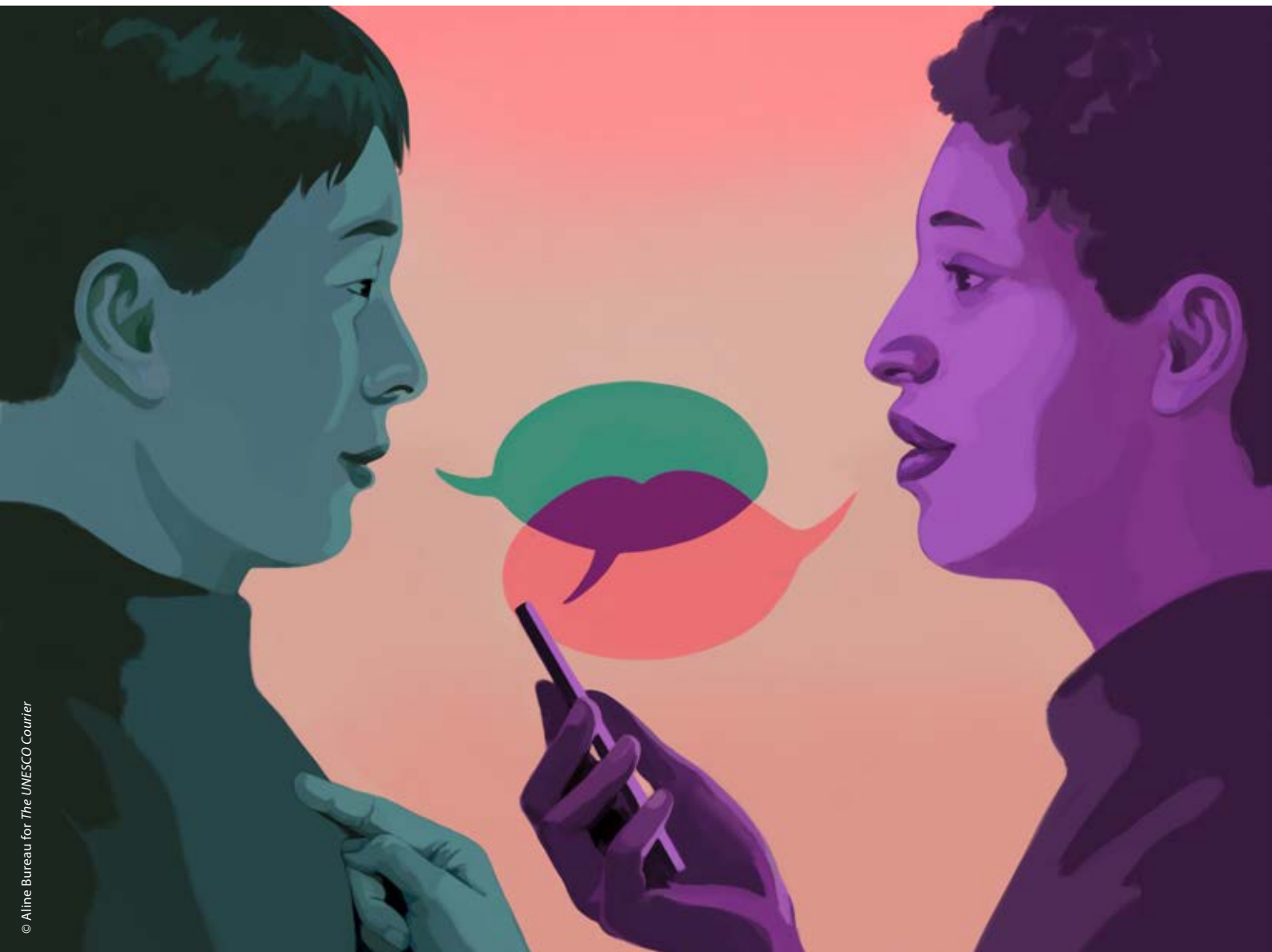
By the end of 2024, 85 per cent of countries in Central and South Asia had introduced bans, compared to 40 per cent in Europe and North America, and 28 per cent in Latin

America and the Caribbean. The Netherlands banned phones in middle and high schools in January 2024, followed by primary schools. Several countries — including Chile, Denmark, Ecuador, Ethiopia, Finland, France, Italy and the Republic of Korea — have recently adopted similar measures.

As the GEM Report emphasizes, however, the issue is not simply banning smartphones. It is also developing students’ critical thinking skills.

Why studying languages still matters

In an era where applications can provide real-time translation, learning a foreign language may appear to be a superfluous effort. Yet this overlooks the fact that human communication conveys far more than a mere string of sentences.



Translation applications now produce a sentence in the time it takes to blink. It is breathtaking — and sometimes a bit eerie — but it helps us reach one another when nothing else is available.

While progress over the last four years has been particularly mind-blowing, the attempts to automate translation are not new. Experiments were conducted as early as the 1950s and 1960s. The development of computer-assisted translation in the 1980s-1990s was a major milestone. The horizons of what is possible have

widened over the past twenty years with the emergence of Google Translate, which evolved from a statistical system trained on a large text corpus to neural machine translation that improved sentence-level fluency.

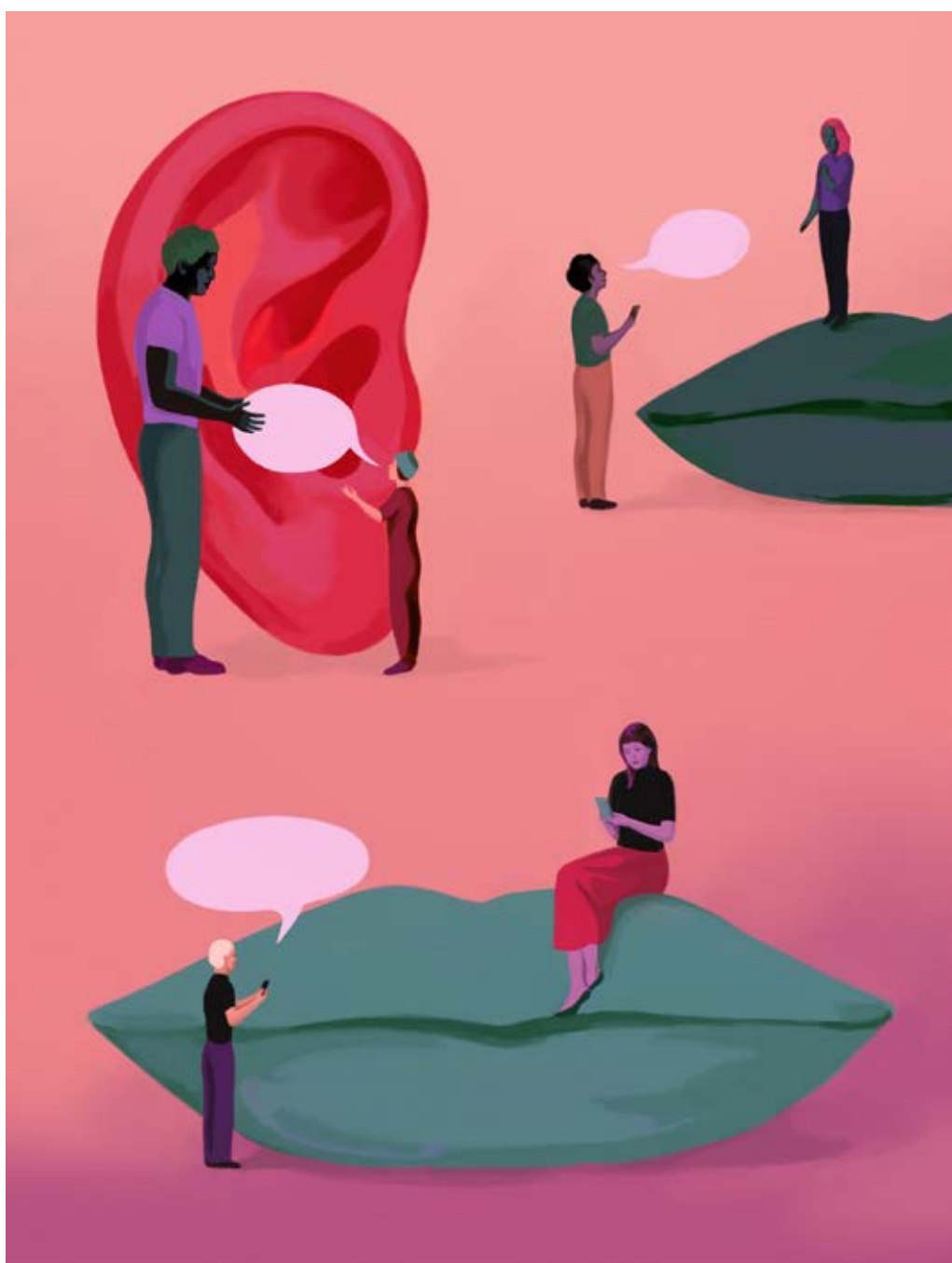
But the revolution brought about by AI is a real game-changer. Phones today resemble real “pocket interpreters”. Many AI-systems can now caption a call, provide live translations into your headphones, or replicate your voice in another language.

Every day, we experience the importance these tools have taken on in our

lives. I recently observed two older couples — one from China, one from Spain — meeting through an AI translation device. When it worked, conversation flew; when it failed, jokes and tone were lost, but through perseverance they repaired meaning together. AI carried them far enough to interact, but being present carried them further.

I myself had a similar experience with a colleague who is deaf, Rachel Coppage. English is our second language, so we switched between my limited New Zealand Sign Language and a

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**I encourage
my students
to use AI as
a support,
not a
substitute**”



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notes application. Typed English felt flat; signing felt mutual, alive. The technology sped access, but the understanding and connection were carried by us.

First contact

Translation tools are excellent for logistics, travel, and first contact. When travelling, finding a clinic, or following a tour, these tools are bridges that did not exist five years ago. However, human-led interpreting is needed when the stakes are higher.

In a 2024 study, professional translators outperformed both Google Translate and GPT4 for Haitian Creole medical discharge instructions (fewer potentially clinically significant errors), while Spanish often performed closer to machine outputs. A 2024 systematic review of AI translation in clinical care showed promising results for short, simple exchanges, but quality varied by language and task and often dropped when translating into English.

Critical spirit instead of “copy-paste”

As a language teacher, I began noticing in 2018 that some students were clearly using Google Translate: their writing did not align with their language level or simply didn't make any sense. Rather than deterring them from this technology, I seek ways to foster an intelligent use of AI — positioning it as a support, not a substitute.



**Languages
are treasures,
not just utilities**

I started to ask students to always draft first and then consult AI to annotate differences, and with the arrival of ChatGPT, to include prompts for feedback (“Is this sentence grammatically correct?”) instead of simply asking “write this for me”. What changed? The “copy/paste and hope” mindset gave way to curiosity and critique.

For the past year, AI has supported spoken practice and provided feedback

for written and spoken productions. However, the human part of communication remains outside AI's capabilities. AI translation is not a substitute for learning a language; it's only a 24/7 extension of the teacher/lecturer, never a replacement.

Create connections

Sometimes learning a language or accessing professional interpreting is not feasible, making translation technology the best bridge on offer. But communication has intercultural requirements that AI alone cannot meet: curiosity about others' values, humility about one's own, and the slow, relational skill of building shared understanding. Learning even a few words of a local language — place names, greetings, expressions of gratitude, inquiries, or apologies, and culturally attuned jokes — constitutes a mark of respect.

Human communication is not just about sentences, but rather what we do together with them. We check understanding, repeat, clarify and rephrase, and above all, we connect. That co-construction is slower than a transcription but safer when stakes are high. It is the heart of intercultural communication.

A roadmap for an inclusive digital space

Launched by UNESCO in November 2025 at the Second World Summit for Social Development in Doha, Qatar, the Global Roadmap for Multilingualism in the Digital Era establishes a strategic framework to ensure the full participation of all language communities — especially underrepresented and Indigenous communities — in the digital world.

Today, more than 7,000 languages are spoken worldwide, but only about 1,000 are represented online. As artificial intelligence (AI) takes hold in education, public services and the workplace, this imbalance risks excluding

entire communities from life online.

The Roadmap, based on the 2003 Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace, aims to promote inclusive and equitable digital development. The result of an international consultation involving 53 countries, it promotes policies that foster ethical digital transformation and a community-led approach to data governance. A forthcoming Global Action Plan will translate these commitments into concrete, time-bound measures.

Languages are treasures, not just utilities. They are a ground to stand on, as they carry histories, values, and ways of understanding the world. UNESCO's Global Roadmap for Multilingualism in the Digital Era aims for underrepresented and Indigenous languages to be present and participating online — a reminder that technology policy and language learning can reinforce each other. A recent Council of Europe recommendation echoes this, placing plurilingual and intercultural education at the heart of democratic life and linking language learning with educational success, social inclusion, and meaningful public participation.

Learning languages increases empathy and participation because it changes how we show up for one another. When details really matter (such as consent, sensitive topics, cultural protocols), we cannot rely on apps alone.

In a world that equates speed and immediacy with success, learning languages is a gentle refusal, keeping the people at the centre of our conversations and helping us build relationships that last. ■

Researcher and Ph.D. candidate at the University of Johannesburg (South Africa), specializing in the study of digital technologies and their impact on the African labour market.

African languages, the blind spot of AI

AI-based technologies trained on content available in dominant languages appear to be less effective when it comes to producing output in Hausa or Zulu. New initiatives, tailored to the specific contexts and needs of students, offer a promising way forward.

Recently, a Kenyan teacher recounted at a conference I was attending that she had initially been optimistic about using an artificial intelligence (AI) powered learning application brought to her school by an international non-governmental organization. She had been told the technology would respond to the needs of every child, whatever their situation, at their own pace and in their own way. But when she asked the application to help explain a cultural concept to her students, using a local proverb about trees that her grandmother had taught her, the application had no answer.

Beyond the anecdote, this scene reflects a growing disconnect experienced by many African teachers today. Over the past decade, the continent has imported an increasing volume of AI-powered educational technologies, which are often built, shaped, and trained around Western realities, culture, and languages. The African education sector must now reflect on how these technologies could profoundly reshape and even disrupt indigenous ways of learning.

This is most apparent in the realm of language, as the majority of educational AI systems operate in English. Studies show that in Nigeria, ChatGPT is among the most prevalent AI tools used for learning. Yet the application only recognizes 20 per cent of written Hausa sentences, even though more than 80 million people in the country speak the language.

This forces millions of Hausa-speaking students to forgo learning in their indigenous language and switch to English when using this tool. However, language is more than mere words; it encodes the culture and worldview of its speakers. When AI-powered technologies marginalize local languages, they weaken the cultural frameworks through which students interpret knowledge.

The data gap

Across the continent, African educators have not stood idle in the face of this cultural erasure. In countries like Ghana, developers have built GhanaGPT, a customized AI created to support localized curricula, allowing learners to receive guidance both in English and local languages such as Twi. But, despite the progress made, this technology is still prone to hallucinations, fabricated translations, and failure to adequately interpret some concepts, because indigenous languages have not been sufficiently incorporated into the training of AI systems.

This challenge is not unique to Ghana; even well-intentioned AI initiatives, such as “Abstracts into Indigenous Voices” in South Africa, struggle with limited indigenous language data. This initiative aimed to use AI to translate academic texts into local languages, but performed very poorly in translating educational material text into Zulu. This is not because Zulu is overly complicated, but because there is

simply not enough text on the internet to train these systems; traditionally, much of Zulu education is carried out orally. In such cases, the very tools meant to democratize knowledge end up reinforcing foreign languages like English. This limits the students’ ability to think and express themselves fully in their own tongue.

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ChatGPT only recognizes 20 per cent of sentences written in Hausa, a language spoken by over 80 million people in Nigeria

In many parts of Africa, education is not merely a transfer of academic information; it is a profoundly relational process through which communities pass down moral values, rituals, and worldviews to learners. It has been documented that in some schools in Kenya, Namibia, and South Africa, elders and community members are co-teaching in classrooms with teachers to share their traditional insights, wisdom, proverbs, oral tradition, and stories. Education thus becomes a communal activity. But this pedagogical

approach is now challenged by AI, which promotes individual screen-based learning.

Misfitting content

In Zaria, northern Nigeria, religious educators have voiced concerns that AI systems could erode cultural identities and threaten interpersonal relationships between mentors and mentees. They argue that this technology lacks *kirki* (moral agency in Hausa ethical thought) and therefore cannot serve as a genuine moral or cultural instructor to students. Similarly, a study of a high school in Lesotho found that teachers feared that AI would increasingly isolate them from guiding students in their spiritual growth.

Furthermore, imported AI systems in Africa tend to produce homogenized learning content that reflects Western realities instead of their own. Here's a very simple example to illustrate this: when researchers asked ChatGPT and

Google Gemini how many seasons there are, these systems replied four. In West Africa, however, there are primarily two seasons: wet and dry. This demonstrates how students in Africa who use AI may get content that does not suit their context and needs. When students internalize these decontextualized facts, it undermines the development of culturally rooted critical thinking.

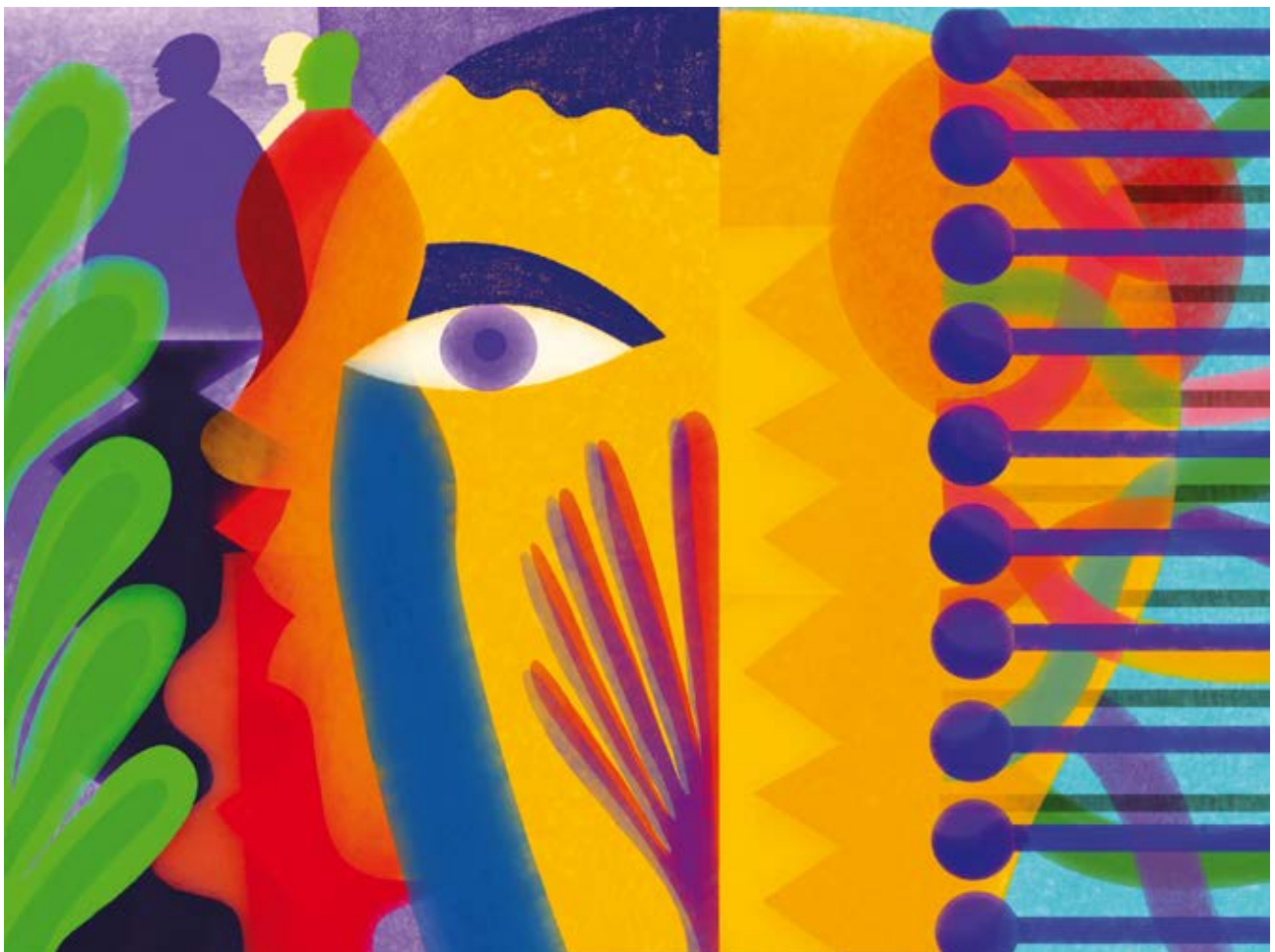
African institutions are increasingly realizing that if Africa does not shape AI, then AI will shape Africa. To address this, language specialists from the "African Next Voices" project have digitized 9,000 hours of spoken languages from Kenya, South Africa, and Nigeria, creating a dataset for anyone to train their own AI models on local languages. Educational technology companies in these countries can take advantage of this data.

Similarly, Rori — an AI-powered maths tutor that operates through WhatsApp in Sierra Leone and Ghana — was designed specifically to help local students. A study

“

Students in Africa who use AI may get content that does not suit their context and needs

involving over 1,000 students showed that after six months of using the application, their academic results tended to improve. The benefits were especially pronounced for students who had been struggling to meet grade-level expectations. Such success stories underscore the pressing need for the African education sector to move beyond imported models and develop homegrown AI systems rooted in local languages, culture, and context. ■



© Diana Ejaita for The UNESCO Courier

AI goes to school in the United Arab Emirates

In 2025, the United Arab Emirates (UAE) made AI a mandatory subject in public schools from kindergarten to graduation. The aim is not only to learn how to master this technology from a young age, but also to be able to question and challenge it.

On a weekday morning in a classroom in Dubai British School Jumeirah Park, a seven-year-old is deep in conversation with Willy Wonka. This version of British author Roald Dahl's famous chocolatier doesn't live in a dog-eared book; he is AI-generated. A few desks away, another child is learning about animals by talking to a virtual polar bear, asking it about its favourite food.

"Every classroom operates on a traffic-light system. Red means no AI; it's the child's own work. Amber opens the door to teacher-directed tools, while green allows for supervised AI exploration," Brendon Owens, the school's head of digital strategy explains.

This scene reflects a widespread reality in many private and public schools across the UAE. In May 2025, the Ministry of Education announced that public school pupils from kindergarten to secondary school would be taught AI in classrooms, making the UAE among the first nations worldwide to integrate this technology into schools.

Distinguishing human from machine

In government schools, the new AI curriculum moves beyond basic tech foundations. It unravels the logic behind data and algorithms, covers software use and project design, and extends to ethical awareness, real-world applications, and community engagement. The purpose

is to equip students with a foundational knowledge of evolving technology.

The youngest pupils learn to compare machines and humans, while those in grades five to eight (ages 10–14) design and evaluate AI systems. By secondary school, the focus shifts to command engineering and real-world simulations.

For the Knowledge and Human Development Authority (KHDA), Dubai's private education regulator, the goal goes beyond keeping pace with global trends. Dr. Saeed Kharbash, KHDA's chief of policies, research and programmes, notes that AI is a top government priority. "If we build a system that balances innovation with safety, supports teachers, and prepares students for the future, that in itself can serve as a reference point for others in the region and beyond," he says.

Identifying bias

Across the country's private school landscape, there is a palpable move towards AI integration, with a variety of new tools finding their way into classrooms. Brendon Owens from Dubai British School Jumeirah Park says his school uses a specialized education platform for students from year 1 to year 8 (aged 5 to 13), because of its built-in safeguarding features. Once pupils reach year 9, they can access more general-purpose, publicly available AI tools.

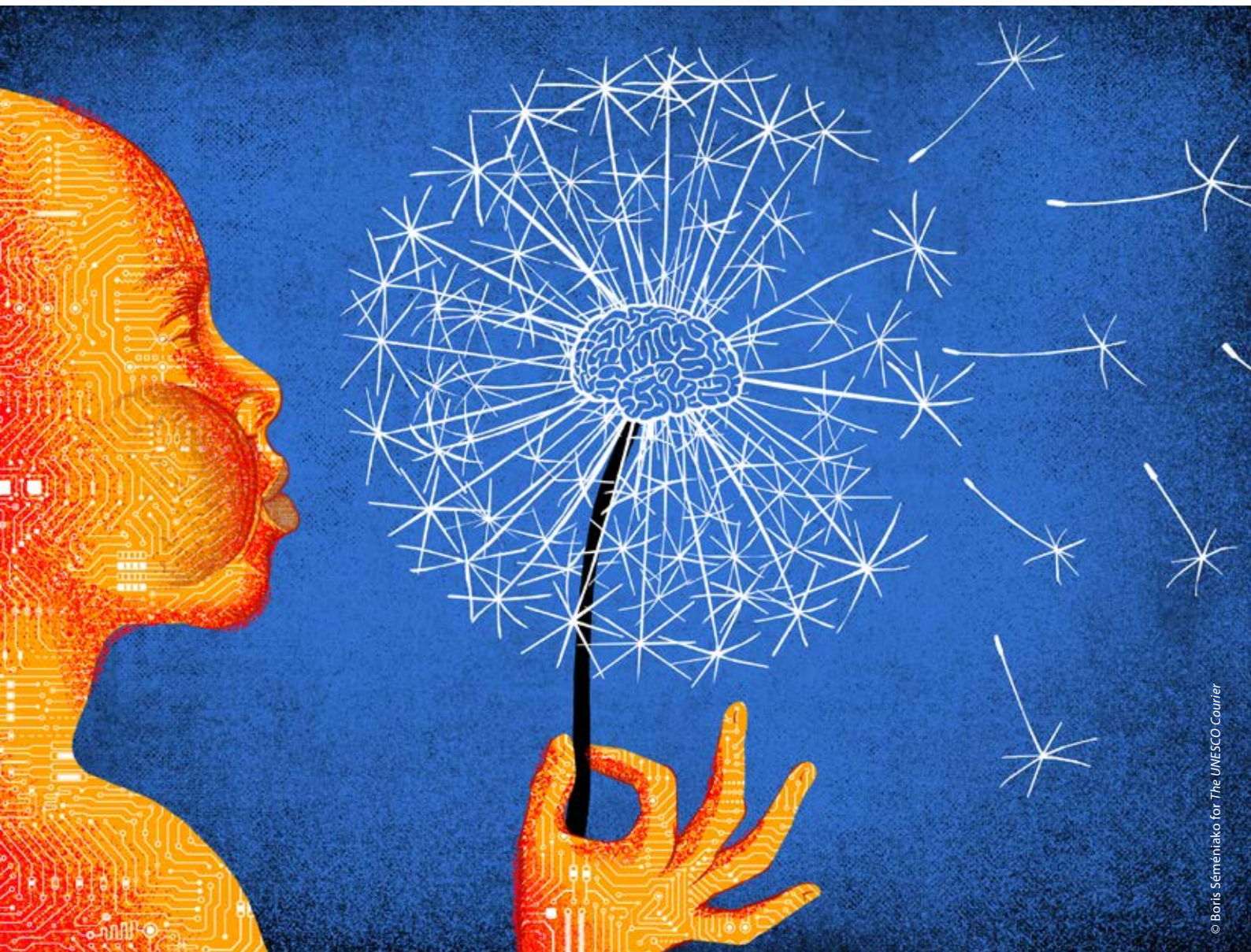
"Because they're all under our school domain, these can be moderated," says Owens, who is also head of education

technology at Taaleem, one of the UAE's leading providers of international schools. He emphasizes that the focus is on helping children develop their own thinking, and explains that throughout their learning journey, they are encouraged to analyse the biases of the tools they use.

“We’re teaching students to question AI-generated responses

Abdulaziz Ahmed, secondary arts and design teacher at Swiss International Scientific School Dubai, shares a similar philosophy. "We're incredibly focused on helping students reflect on their own thinking because it shows them how to question AI-generated responses and recognize bias. We want them to stay curious, confident, and in control — not dependent on technology."

At Delhi Private School Dubai, AI becomes a formal subject in middle school. The school principal Rashmi Nandkeolyar says that AI tools are especially helpful in reducing teacher workload: teachers are using them to



plan lessons, make documents, and mark lessons.

Safeguarding first

Rumaisah Wajid, senior executive for educational policies at Dubai's private education regulator KHDA, is concerned about the volume of new products flooding the market. "The challenge is no longer access to tools, but ensuring their quality, safety, and relevance," she says, citing safeguarding, quality assurance, and responsible implementation as the primary hurdles.

KHDA recently announced an AI Literacy Programme designed to build the critical thinking needed to question them. Dr. Kharbash acknowledges that the road ahead is not a straightforward one. "The pace of AI development is exceptionally

fast, and staying informed while making thoughtful, evidence-based decisions is not easy," he says. "Our role is to balance innovation with responsibility."

Dr Alison Burrows, Senior Lecturer in Education at Middlesex University in Dubai, has been interviewing teenagers about their AI habits and found that 100 per cent of them use AI. Many



The challenge is no longer access to tools, but ensuring their quality

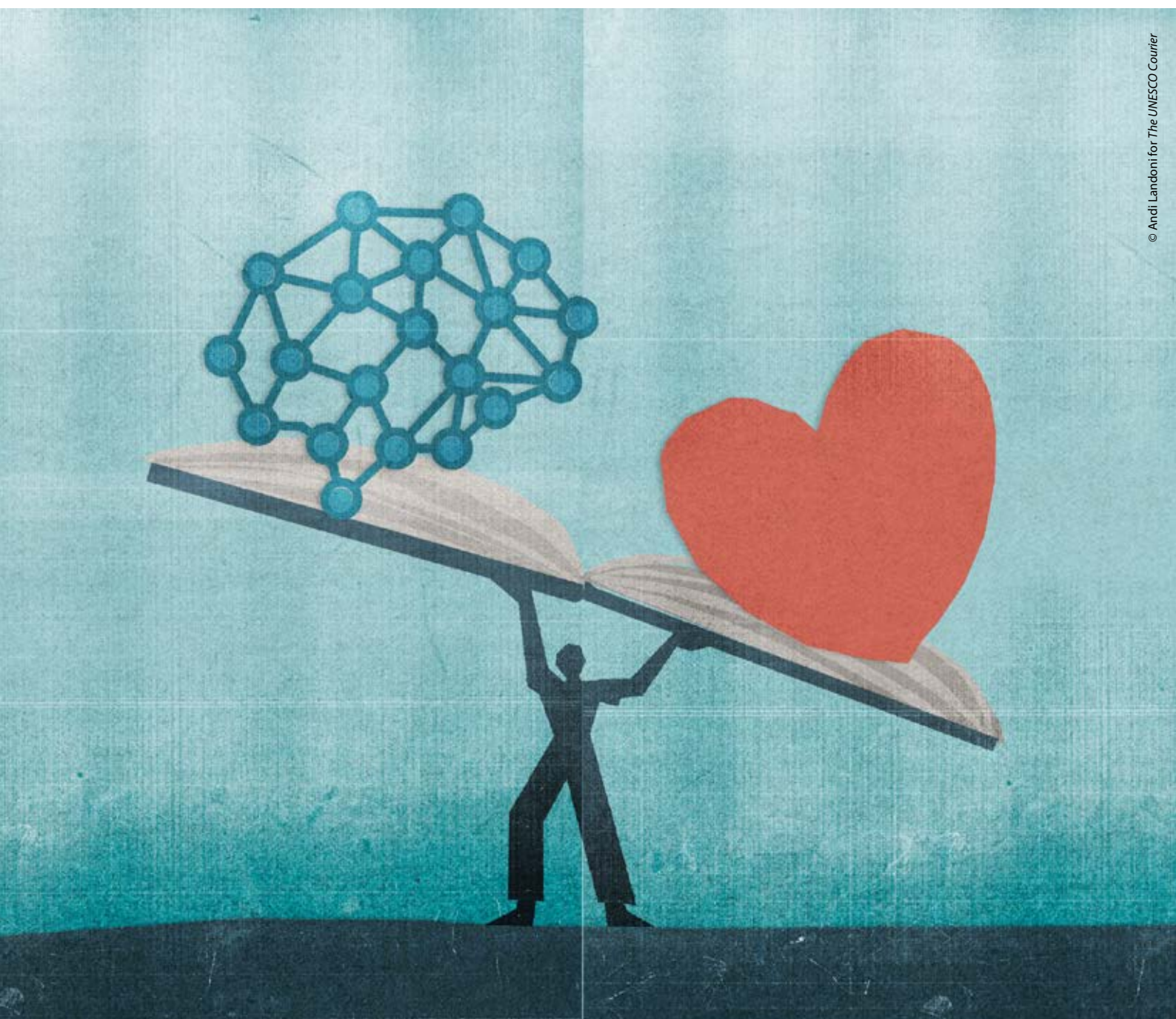
are using it to complete their entire assignments, something she warns "is going to accelerate cognitive stunting and cognitive offloading". She raises concerns about the speed at which AI has been rolled out at schools, because "AI has not been safety-tested on children".

A 2025 Cambridge University Press & Assessment and YouGov survey found that nearly half of UAE adults identified emerging technology, such as AI, as one of the top three challenges for which education needs to prepare the next generation.

While UAE's schools are deepening their AI integration, no one is questioning the central role of teachers. "An AI tool can't look at a child's face when they come through the door," Brendon Owens says, "and know whether they've had a bad night, or if something is on their mind." ■

Argentine teachers divided over AI

A study conducted in 2025 shows teachers' ambivalence, torn between a desire for training and concerns about a technology that has already forced them to alter the way they work.



Early last year, Cecilia Verdicchio, a professor at the Higher Institute of Teacher Training in Buenos Aires, asked her students to comment on an essay by Brazilian educator and philosopher Paulo Freire. While marking the papers, she realized that the same three ideas — unrelated to the theme of the essay — recurred in almost all of them. Clearly, most of her students had resorted to using artificial intelligence (AI) instead of presenting a critical reading of the text. Following this experience, Verdicchio, who is also head of the Alas primary school in El Palomar on the outskirts of Buenos Aires, decided to ban the use of mobile phones in class.

At Tomás A. Edison College, in the province of Mendoza in the west of the country, headteacher Graciela Bertancud made the same observation — several students were handing in work that had been produced entirely by AI. But rather than banning it, she chose an opposite strategy, namely to develop a critical approach to these technologies. “In our school, all assessments are now oral. We allow students to use electronic devices, but during the exam, they have to explain whether AI was used, for what purpose, and in what ways it was helpful,” she explains.



The eruption of generative AI is causing serious concern among teachers

Serious concerns

This difference in approach, which runs through the entire education system from primary school to university, is a good illustration of the contradictory feelings that artificial intelligence evokes among teachers. A study published in July 2025, entitled *Education and AI: Risks and Projections*, highlights this ambivalence.

Carried out by the Centre for Social Research at the Argentine University of

Business, in collaboration with the human rights organization Voices!, the report shows that AI is perceived by some of those surveyed as a tool that can provide personalized help to struggling students or lighten administrative tasks. However, while 72 per cent of respondents said they are in favour of training in AI, 77 per cent feared a decline in students’ skills.



The role of the teacher will evolve to support students in ways that no machine can, by connecting emotions to interpersonal skills

“The eruption of generative AI is causing serious concern among teachers, particularly with regard to assessment methods,” confirms Flavia Costa, a researcher at the National Scientific and Technical Research Council (CONICET) and author of the essay *Technocene: algorithms, biohackers and new lifestyles*.

How can a student’s work be assessed if there is doubt about who is the author? For Flavia Costa, technical solutions for detecting fraud are not the answer. “In some countries, higher education institutions have invested heavily in this kind of software. In fact, the real issue is not so much about assessment as learning,” continues the researcher, who also draws attention to the unreliability of specific content produced by AI.

The joy of learning

Faced with the spectacular advances in generative AI, many teachers have already altered their practice. Alejandro Dujovne, a sociologist, researcher and professor at the School of Interdisciplinary Advanced Social Studies in Buenos Aires, is one of them. “Even two years ago, I still expected my students to produce work with a bibliography and a text written in a precise and clear style,” he explains. Now, he seeks above all to cultivate a taste for reflection in his students. “Today, I prefer to use open-ended reflection exercises on their research topics, which demonstrate their own personal approach. It’s not so

much about discouraging the use of AI, as reconnecting them with the pleasure of intellectual work.”

At the Cristo Rey school, directed by Marcela Barrionuevo in Tres de Febrero, in the province of Buenos Aires, AI is approached as a subject for reflection in class, particularly through literature. “For example, we suggested reading the book

Nave a Tierra, by children’s author Martín Blasco. This science fiction story depicts a group of characters travelling through space aboard an AI-piloted spaceship in search of a planet that can welcome them. After a while, the passengers end up doubting the reliability of the pilot. I think it’s the role of teachers to encourage this kind of step back,” explains Marcela Barrionuevo.

Reflection on the changing role of teachers is only just beginning. “We will probably have to go through a period of collective experimentation, which we hope will be instructive for everyone,” says Flavia Costa.

Whatever happens, education has a human dimension that makes teachers irreplaceable. “No technology can teach you to be independent — only a human being can do that. I believe that in this respect, the role of teachers will evolve to support students in ways that no machine can, by connecting emotions to the development of the interpersonal skills needed to communicate, adapt and live with others,” says Graciela Bertancud.

Cecilia Verdicchio sums it up in a single sentence: “No robot or artificial intelligence will ever be able to look kindly at a child or put a hand on their shoulder and say, ‘I believe in you.’” ■

An intelligent solution to inspire young minds in rural China

In China's mountainous province of Guizhou, a human-centred AI initiative is reshaping the educational landscape. Rather than providing answers on demand, this digital mentor prompts children to think independently.

In the rugged karst landscape of Changshun County in Guizhou province, southwestern China, the silence of the mountains is being broken by a new kind of dialogue. It is not the rote recitation of textbooks that has characterized rural education for decades, but a vibrant inquiry assisted by generative artificial intelligence. Here, a pioneering initiative known as the Hongyan AI Project is used to bridge the digital divide, offering an essential extension of support to teachers in remote areas.

The discourse on generative artificial intelligence in education is often polarized. In academic circles, researchers warn of what they call cognitive atrophy, the fear that AI will do the thinking for the student, eroding critical faculties. "Techno-evangelists", on the other hand, promise a frictionless future of efficiency in which teachers are replaced by algorithms.

Chen Keliang, the leader of the project, and Li Zongze, its technical founder, transcend this binary view. They see Hongyan — the "wild goose" — not as a

disruptive force, but as a compassionate guide empowering learners to transcend barriers, much like a goose leading its flock across vast distances.

"In geographically isolated regions, the primary barrier to education is not a lack of information but a lack of personalized mentorship," they say. "AI is not a surrogate for the educator," Chen stresses. "It's an amplifier of the teacher's reach and the student's latent potential."

A Socratic method

The high-altitude and relatively sparsely populated villages of Changshun had long grappled with a shortage of teaching staff. A single teacher often bore the burden of teaching a handful of subjects, as diverse as art and English, leaving little scope for individualized instruction. The Hongyan AI system intervenes by automating the mechanical tasks of teaching, such as grading and disseminating foundational knowledge, thus liberating teachers to reclaim their true vocation: emotional and moral guidance.

While commercial large language models are optimized for speed and instant answers, Li has opted for a different approach. It consists of implementing a Socratic interaction logic specifically designed to protect the student's cognitive development. "The system is programmed to refuse the answer trap," he explains. Concretely, when a student encounters a mathematical impasse, the AI tool does not provide the solution. Rather, it initiates a diagnostic dialogue, posing questions such as "At which logical juncture did the path become unclear?" or "Can we extrapolate the rule from our previous exercise?"

This philosophy tackles a critical ethical concern: encouraging students to deconstruct their own thought processes. In this context, technology catalyzes cognitive growth rather than inducing intellectual passivity.

Active conversation

The experience of Liu Linglin, a teacher at Changshun National High School and a member of the project's first pilot group, bears witness to this: since she started using this new tool, her role has shifted from a focus on imparting knowledge to guiding students in their learning.

"Before, I often felt my energy was spread too thin to attend to every child's unique needs," Liu says. "I felt like a mere conduit for textbooks." The turning point came with the first classroom demonstra-



When a student encounters a problem, the tool does not simply provide a solution but initiates a dialogue

tion of generative AI. “The students realized the system understood their creative questions,” she says. “The atmosphere shifted from passive silence to an active conversation.”

She says that she now has the “emotional bandwidth” to notice subtle shifts in a student’s mood, building a bridge of trust that technology alone could never construct.



**By offloading
drudgery to
AI, the project
prevents teacher
burnout**

By offloading drudgery to AI, the project prevents teacher burnout, a leading cause of educational decay in rural areas worldwide. When AI handles the “what” of the curriculum, the teacher can focus on the “who”, the child behind the desk. Among other things, this helps teachers recognize if a student is struggling with a concept due to a lack of confidence rather than a lack of ability.

Boundless patience

For students such as Xia Mukun, at Changshun National High School, this technology is more than a tool. It is “a teacher with boundless patience”, he says. Through the filter of textbooks, his perception of things such as high-rise buildings and the ocean could not have been fuzzier, he says, but the AI system has helped deliver such images with high-fidelity clarity.

“It paints a picture for me: blue waves crashing against white sand. It’s no longer just words, but a place I am determined to reach.” Xia, previously stricken with a fear of being mocked for his pronunciation, practiced privately with AI. “It corrected me patiently, one sentence at a time.” AI then layered his recitation with the local sounds of Guizhou birdsong and mountain streams. When Liu played the recording in class, the room fell silent. “Right then I realized it wasn’t that I couldn’t do it,” Xia says. “I just needed a partner who would wait for me to find my voice.”

As the architects of the project prepare for its expansion into Southeast Asia, its core remains its human-centredness. Chen and Li believe that while the code is a commodity, the ethical framework — treating the student as someone capable of self-improvement, rather than a consumer — is the true innovation. ■



▼ In Guizhou province, primary school students practice table tennis using the Hongyan interactive smart mirror developed by the Beijing University of Posts and Telecommunications, 2025.

Parenting by prompt in India

From diagnosing developmental milestones to crafting personalized bedtime stories, a new generation of Indian parents is turning to AI for advice on their children's education and health.

In her New Delhi home, Sadia Fuzail, a 35-year-old copy editor, recounts the complexities of parenting when her three-year-old son, Ilhan, starts throwing his toys around. "He is a lot more active than other children," says Fuzail, extricating a toy truck that Ilhan had entangled in her hair.

In 2024, the little boy's boundless energy alarmed his grandparents, to whom his behaviour mirrored symptoms of autism and attention-deficit/hyperactivity disorder (ADHD). These concerns resurfaced when Fuzail's friends suggested a similar diagnosis after interacting with the boy. This was the first time Fuzail turned to an AI chatbot, which categorized Ilhan's development as normal.

For the next year, the AI chatbot served as Fuzail's main advisor, acting as

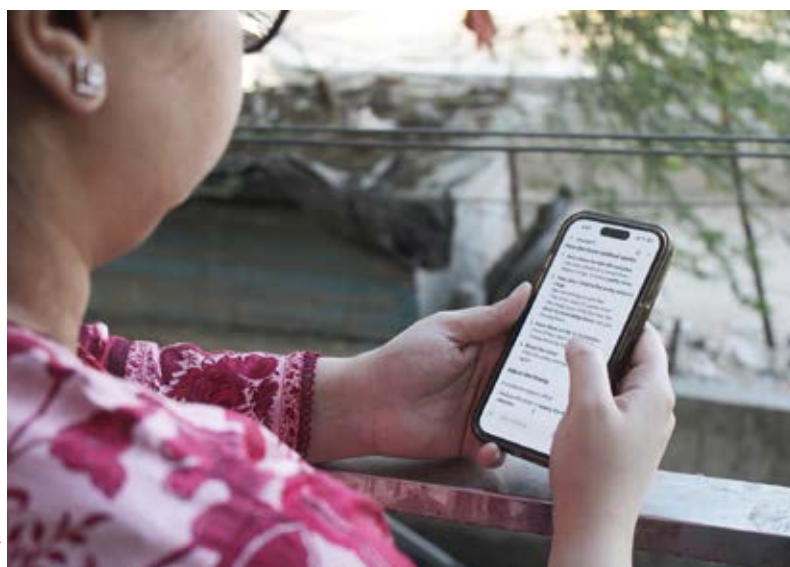
a digital buffer against the concerns of her relatives. It was only recently, when a play therapist finally evaluated Ilhan, that she received professional confirmation: the AI's assessment had been accurate. However, the one-year gap between the chatbot's verdict and the expert's reassurance highlights a growing gamble — while the algorithm offered Fuzail peace of mind, her story raises the question of the cost of a potential misdiagnosis.

Redefining traditional roles

Fuzail's case is not an isolated one. According to a comprehensive 2026 Gipsi inSIGHT report by the Mumbai-based digital agency Tonic Worldwide, 52 per cent of Indian Gen Z parents

— the generation born between 1997 and 2012 — now trust AI over traditional search engines for parenting advice. The report underscores a fundamental shift in behaviour, where AI plays a growing role in everyday decision-making.

With the world's second-largest smartphone market and one of the fastest rates of AI adoption on the planet, India has become the primary testing ground for how technology can redefine traditional human roles, including that of a parent. Platforms like Huckleberry, Nanni AI, and Parentune leverage AI to track metrics such as sleep schedules and nutrition, whereas general-purpose chatbots like ChatGPT, Google Gemini, and Qwen have become integral to the daily interactions and decision-making of the parenting journey.



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52 per cent of Indian Gen Z parents now trust AI over traditional search engines for parenting advice

▼ Sadia consults an AI model for advice on her son's toileting routine.



▼ Sadia also turns to AI to come up with ideas for playtime.

© Syed Ahmad Rufai

the societal impacts of technology — argues that parents gravitate toward chatbots for consolidated answers “to avoid the exhaustion of navigating endless online sources”. The GIPSI inSIGHT 2026 report confirms that this reliance on AI tools represents a transitional phase in modern parenting — a response to the “recursive anxiety” of new parents facing an unprecedented information overload.

Cultural biases

As Maryam grows, so does Siddiqui’s engagement with AI. The prompts she sends have evolved from basic health checks to nuanced behavioural enquiries, such as “How do I handle her tantrums with patience?”, or “How can I make her meal look attractive?”.

Beyond practical advice, Siddiqui experiments with the creative capabilities of generative AI. Once, for example, she uploaded her daughter’s photograph into a chatbot to visualize how she would look bald. “In India, there is a longstanding tradition of shaving off a child’s hair for better growth.” But after seeing the generated image, the family was averse to the idea of shaving.

However, reliance on AI comes with significant caveats. Private algorithms can change without notice, and cultural biases remain a hurdle. “The answers that the AI generates are predominantly oriented towards life in the West,” Fuzail notes.

The technology can also exacerbate parental anxiety as it explores all possible scenarios, including the most frightening ones such as brain damage after a simple fall.

For Damodaran, these examples clearly demonstrate that for critical health decisions, human expertise remains non-negotiable. “I am comfortable with a psychologist using AI to aid their work, but not with a patient using it as a substitute for a psychologist.” ■

Gentle parenting

Uzma Siddiqui is a resident of Bhopal, a city in central India. Siddiqui was 26 when she had her daughter Maryam-bin-Shadab, who is now two. For Siddiqui, being a mother involves navigating a shift that many South-Asian millennials face: the adoption of “gentle parenting”. “I was not exposed to this approach as a child, and consequently I have little understanding of it as a parent,” she says.

To bridge this intergenerational gap, Siddiqui turns to AI. She explains how guidance and opinions sourced from AI help her generation practice gentle parenting and dismantle routines that were entrenched in their parents. “Feeding sugar to a one-year-old was common practice in my childhood, but as a parent I don’t feed it to my daughter.”

Unlike her husband who prioritizes expert opinion, Siddiqui represents a growing cohort who turn to digital tools for an initial screening of their child’s symptoms. “I consult AI first and perhaps an expert eventually,” says Siddiqui.

Personalized stories

For Akhil Damodaran, an academic and CEO of an AI and blockchain-based firm, the technology is a creative collaborator. Damodaran utilizes generative AI to craft custom storybooks featuring his

eight-year-old son as the protagonist. Damodaran’s son is autistic, and the technology plays a functional role in his development. His prompts to the AI are precise — “What games shall I play with my son?”, or “What words should I repeat to facilitate learning?”

“
Parents gravitate toward chatbots to avoid the exhaustion of navigating endless online sources

In his view, relying on AI does not question parental competency. “Parenting is not merely a skill, but an evolution,” he says, noting that compared to a search engine, AI can feel more like a peer.

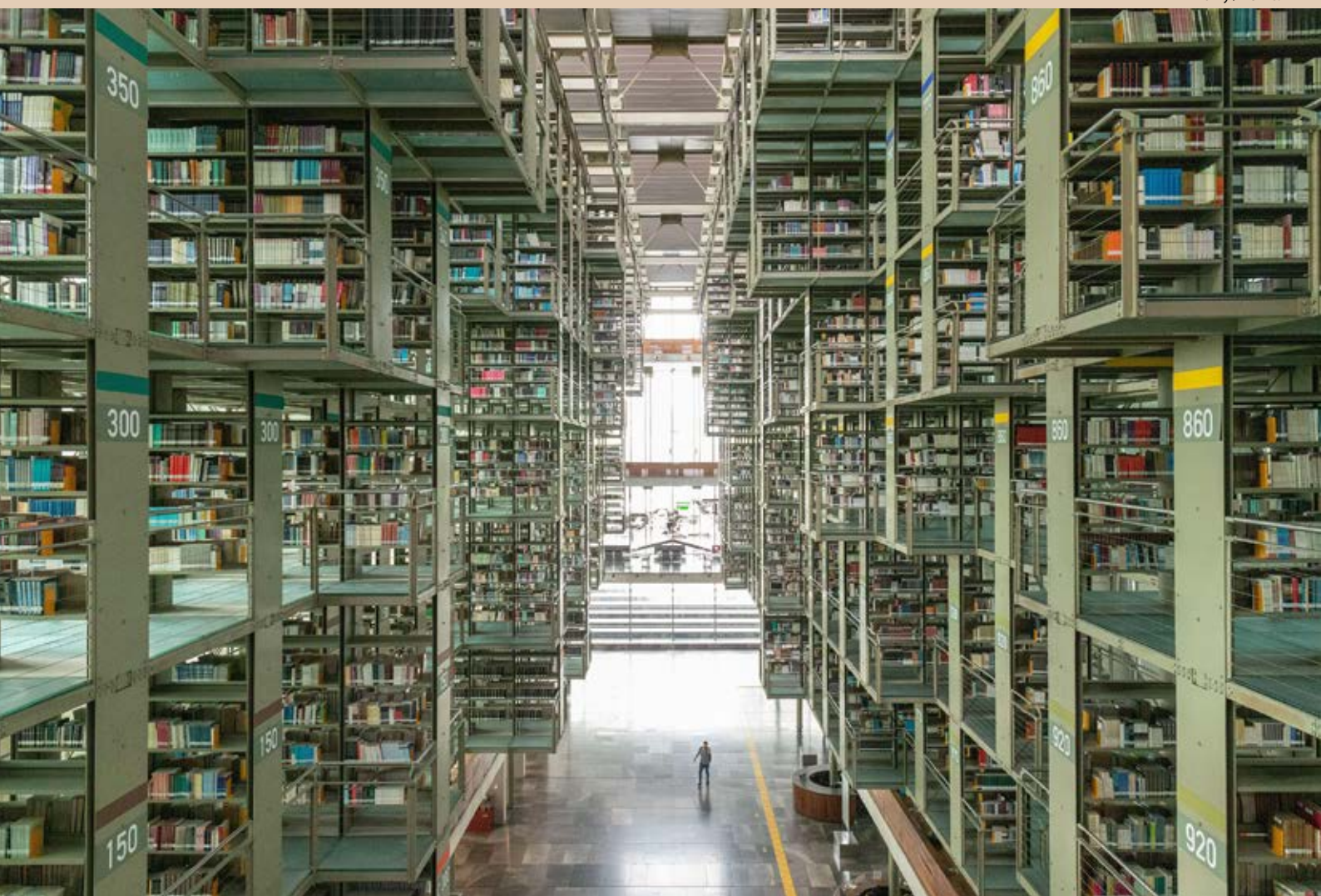
Experts point to a shifting paradigm where AI has become a means of filtering the flow of available information. Urvashi Aneja, founder of Digital Futures Lab — one of India’s foremost think tanks on



Libraries unfolded

A man wearing a white turban and a white long-sleeved shirt with yellow floral patterns is working with a large stack of old, thick books. He is standing in a library with wooden shelves filled with many more books in the background. The lighting is warm and focused on the man and the books he is handling.

▼ The Al-Ahmad Mahmoud library in Chinguetti, Mauritania, is one of the eleven desert libraries protected by the UNESCO Heritage Emergency Fund. More than 6,000 manuscripts and books dating back to the 12th and 13th centuries are preserved there and threatened by Saharan heat, insects, and floods.



1

In Mexico City, the Vasconcelos Library rises like an architectural work of light. Glass façade, steel lines, bare concrete — everything exudes transparency. Inside, suspended walkways trace paths through space. The shelves rise, intersect, repeat. The effect is dizzying.

How can we not think of Borges? In *The Library of Babel*, the Argentine writer imagines identical galleries reproduced ad infinitum, in which every book, written or yet to be written, already exists: the promise of total knowledge. Borges, former director of the national library of Argentina, confided: "I have always imagined paradise as a kind of library." At Vasconcelos, the phrase takes form; each walkway suggests an essential book is waiting somewhere.

This quest for universality has its roots in antiquity. Founded in the 3rd century BCE, the Library of Alexandria was the first to aspire to the ideal of universal knowledge. Destroyed by fires and conflicts, it was reborn in 2002 thanks to a vast international effort coordinated by UNESCO.

More than ever, libraries are ramparts. They stubbornly resist the obsolescence of digital media. Patiently, they preserve, restore and transmit that ordinary yet priceless object, the book, which the world celebrates every 23 April on World Book and Copyright Day.

At a time when screens capture attention and fragment time, libraries invite us to make the moment last. From the baroque splendour of the Joanina Library in Coimbra, Portugal to



2

Photos: hemis.fr

Text: Katerina Markelova
UNESCO

the sleek modernity of the Malmö Library in Sweden, we encounter within them focused students, absorbed researchers, pensive readers and children poring over their first stories.

It is perhaps one of the last places we can get lost in, the better to find ourselves. "The essential purpose of a library," said Italian writer Umberto Eco, "is to promote the discovery of books the reader did not know existed and that prove to be of vital importance to him." ■

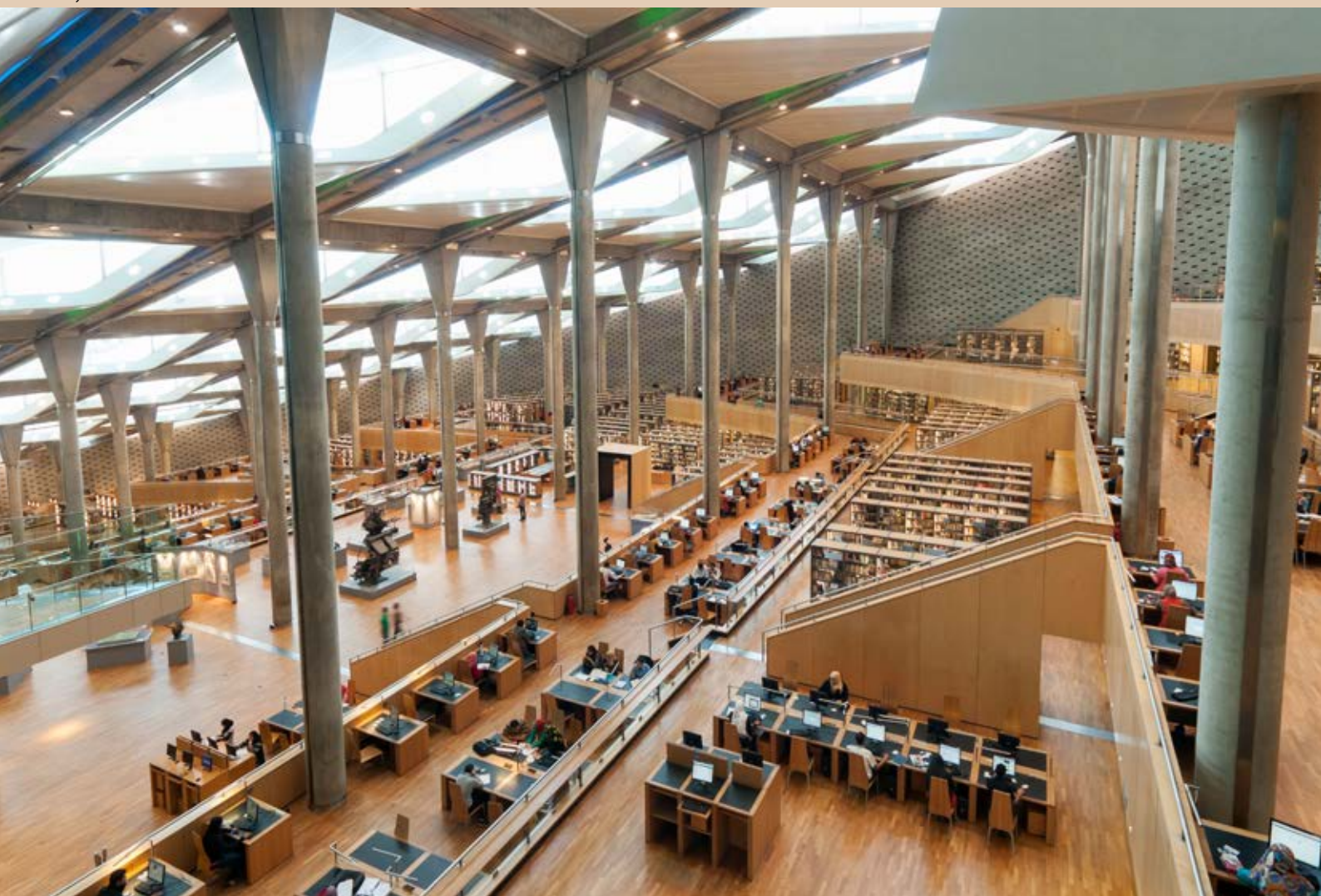
1. and 2. *The Vasconcelos Library in Mexico City, inaugurated in 2006, is named after the 20th-century Mexican author José Vasconcelos. The building is defined by a vast open space where a network of walkways connects bookshelves that appear to float across seven levels.*



3



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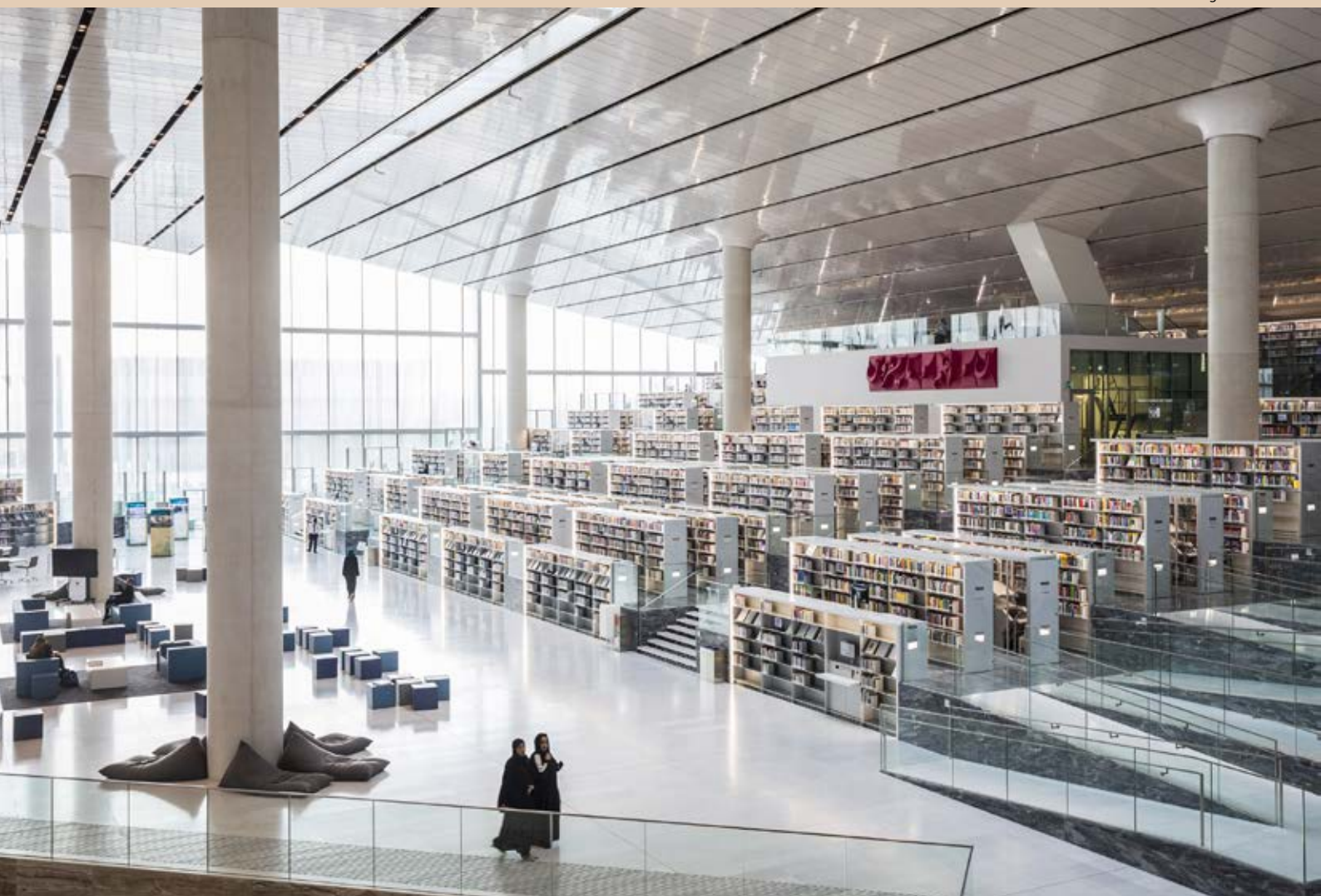
3. Close to the site of the ancient library – a great intellectual centre of Antiquity – the new Library of Alexandria was built in 2002 with the support of UNESCO. The building, shaped like a solar disc, is engraved with the scripts of 120 different languages.

4. Inaugurated in 1997, the Malmö City Library in Sweden is distinguished by its contemporary extension and its striking glass facade. Known as the “Calendar of light”, this structure overlooks the surrounding park, inviting visitors to contemplate the rhythm of the seasons.

5. The Library of Alexandria’s reading room spans over 20,000 square meters across seven levels. It is “the most beautiful in the world”, according to its director, Ismail Serageldin (The UNESCO Courier, 2002), who describes it as a “cathedral of knowledge” bathed in light.







8

6. A gem of Baroque architecture, the Biblioteca Joanina Library in Coimbra (Portugal) is home to a colony of bats that protects the woodwork and books by eating insects. Every evening, the reading tables are covered to protect them from the bats' nocturnal activity.

7. The Byeolmadang Library, located in a shopping mall in Seoul's Gangnam business district (Republic of Korea), is a bustling hub. In this shared space, library-goers and shoppers cross paths every day.

8. The Qatar National Library in Doha is defined by its vast, light-filled interior. It features creative spaces dedicated to photography, 3D printing, and a music studio, as well as a laboratory for the preservation of ancient manuscripts and documents.

9. Established in 1837 by Portuguese immigrants, the Royal Portuguese Cabinet of Reading in Rio de Janeiro (Brazil) holds the largest collection of Portuguese-language works outside Portugal. Its main room is striking for its carved woodwork, coffered ceiling, glass dome, and shelves of ancient volumes.

10. A treasure of medieval art created in the 9th century, the Book of Kells is preserved in the library of Trinity College Dublin (Ireland), where visitors can admire the richness and meticulous detail of its illuminations.



9



10



▼ Inaugurated in 2017 in Tianjin, about a hundred kilometres southeast of Beijing (China), this library is striking for its bold architecture. Nicknamed “The Eye”, it houses a collection of 300,000 volumes.





▼ A dodo from Mauritius on display at the National Museum of Natural History in Paris (France). A symbol of species extinction linked to human activity, this flightless and fearless endemic bird disappeared at the end of the 17th century, driven to extinction by hunting and introduced species.

When do we decide that a species is extinct?

It is far more difficult to prove an absence than to confirm a presence. Declaring a species extinct is the result of meticulous, long-term observation. But such inventory of living organisms is essential for adopting appropriate conservation measures and saving species before it's too late.

Of the approximately 11 million species inhabiting the planet, it is estimated that only 2.2 million, or just 20 per cent, are known. Some studies, which take microbial diversity into account, even suggest a figure of between one and six billion species. Yet, for several decades now, scientists have been warning of the accelerating rate at which species are disappearing, a phenomenon now referred to as the sixth mass extinction.

Unlike the past five major extinctions, which were caused by natural disasters, this one is directly linked to human activities — the destruction and artificialization of natural habitats, overexploitation of resources and illegal trafficking, global climate change, pollution, and the introduction of invasive alien species.

It is therefore crucial to compile an inventory of living organisms and to monitor species, not merely to satisfy scientific curiosity, but because our lack of understanding of the full extent of species diversity has very real consequences. The COVID-19 pandemic revealed our ignorance of coronaviruses and their hosts, while poorly understood microorganisms play a key role in the

carbon, nitrogen and sulphur cycles, which are essential for climate regulation and soil fertility. Biodiversity is the bedrock of our survival: oxygen, food, water, medicine, raw materials, pollination, soil fertility, climate regulation, flood prevention — these all rely on nature. Thus, a better understanding of nature means that we can better protect ourselves.

The disappearance of the Christmas Island shrew

But how can we protect what we do not know? How can we measure the impact of climate change on species when we are unaware of their distribution, or even their existence? The answer is complex. At a global level, it is the International Union for Conservation of Nature (IUCN) which, through its famous “Red List”, has served as the international benchmark for biodiversity since 1964.

This list classifies species into several categories according to their risk of extinction, ranging from “least concern” to “extinct”. It is updated regularly, accessible online, and currently lists the status of 172,600 species. It also provides information regarding their distribution range, population size, threats and

conservation measures, which help inform the necessary decisions regarding conservation.

According to these criteria, a species is declared “extinct” when there is no reasonable doubt that the last individual has disappeared. This conclusion is reached on the basis of consistent evidence: a prolonged absence of reliable sightings, the loss of habitats, or the probability of extinction calculated using population models. A species is only declared extinct after decades without confirmed sightings and targeted search campaigns. This is how the shrew of Christmas Island, in the Indian Ocean, was officially declared extinct in 2025, after forty years without sightings. Furthermore, governments or national agencies may also declare a species locally extinct within their territory.

Proving absence

The problem is that proving a species is absent is far more complicated than confirming its presence. Many species are elusive, tiny, nocturnal or live in hard-to-reach habitats. For most of them, data is virtually non-existent, and they may disappear without anyone noticing. →

Conversely, they may go unnoticed for decades before being rediscovered, known as the Lazarus effect. However, most of these rediscoveries concern species so rare or difficult to find that their only confirmed occurrence was derived from their initial description.

However, knowing whether a species has actually become extinct is crucial for choosing the right conservation strategies. Many species can be saved, even when only a few individuals remain. The California condor, which came close to extinction in the 1980s (when only 22 individuals remained in the wild), was saved by reintroduction programmes. Conversely, an incorrect assessment — whether overly optimistic or overly pessimistic — can divert conservation efforts at the wrong time, with irreversible consequences.

Declaring a species extinct can therefore have far-reaching consequences and requires great caution. The problem is that in many cases, insufficient data makes it impossible to accurately assess the level of threat. This can lead to a sense

of scientific uncertainty that plays into the hands of those who question the reality of the sixth mass extinction, or the impact of climate change. In the absence of tangible evidence for all species, it is easy to downplay the crisis or cast doubt on scientists' warnings.

A third of species threatened

Yet the mounting evidence — declining populations, shrinking habitats, ecological disruption — leaves no doubt as to the gravity of the situation. The IUCN Red List identifies more than 48,600 species threatened with extinction, including 44 per cent of reef-building coral, 41 per cent of amphibians, 38 per cent of trees, 38 per cent of sharks and rays, 34 per cent of conifers, 26 per cent of mammals, 26 per cent of freshwater fish and 11.5 per cent of birds.

Climate change is further exacerbating the biodiversity crisis. Rising temperatures, acidification of the oceans, and the increasing frequency of extreme

events such as heatwaves and floods are all phenomena that directly affect ecosystems and accelerate species extinction. According to IPBES (the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services — the equivalent of the IPCC for climate change), nearly half of the species studied have suffered climate-related local extinctions, and a third of animal and plant species could disappear by 2070 if nothing is done.

There are many examples: the golden toad of Costa Rica has disappeared due to drought and pathogenic fungi, encouraged by global warming; the Cryptic Treehunter, a Brazilian bird, has been declared extinct after its habitat was reduced by drought and wildfires, while corals are bleached by rising temperatures. And many species of seabirds are at risk of disappearing in the future due to climate change, which is altering the availability of their prey and disrupting their breeding sites.

Time to act

The sixth mass extinction is a reality, and there is no longer any dispute within the scientific community that it is being accelerated by human activities. However, uncertainty remains regarding its exact scale because of the limitations of our knowledge and methods. This uncertainty

“

Many species can be saved even when only a few individuals remain



▼ Clay reconstruction in progress of a dugong, a large herbivorous marine mammal, at the National Museum of Natural History in Paris. The species is currently classified as “vulnerable” by the International Union for Conservation of Nature (IUCN).



▼ “The Garden of Extinct Plants”, an installation by architect Denis Vallette and sculptor Olivier Barthélémy, conceived based on the IUCN Red List. It was presented in 2011 at the International Garden Festival at the Domaine de Chaumont-sur-Loire, France.

must not be used to deny the crisis, but rather to highlight the urgent need for action: to catalogue, protect and restore.

It is crucial to speed up the description and monitoring of species, particularly for groups under-represented in current studies, such as invertebrates, fungi and microorganisms.

Thanks to technological advances, scientists have innovative methods at their disposal to acquire and process increasingly precise morphological, genetic and environmental data on a growing number of specimens. These data are then incorporated into integrative taxonomy approaches, enabling species to be defined and described.

“

**The sixth
extinction
could be halted
if we act
decisively now**

The development of open science facilitates the sharing of data and discoveries among researchers worldwide, thereby accelerating scientific progress. New technologies, such as environ-

mental DNA and artificial intelligence, as well as citizen science programmes, play a key role in monitoring known species and discovering new ones.

Unlike past mass extinctions, this sixth extinction could be halted if we act decisively now. Beyond simply acknowledging the facts, it is urgent that we take action. IPBES scientists are calling for a transformative change in our society to slow down the five main drivers of biodiversity loss: habitat destruction, overexploitation of resources, climate change, pollution and invasive species. There is not a minute to lose. ■

Interview by
Laetitia Kaci

UNESCO

Interpretation
from Japanese:
Naoki Goto

UNESCO

Kamome Shirahama :



“My stories can speak to readers who feel uncertain about themselves”



Witch Hat Atelier © Kamome Shirahama / KODANSHA LTD

The creator behind the famous manga series *Witch Hat Atelier*, Japanese manga artist Kamome Shirahama has gained global fame thanks to her unique style — recognized for its elaborate drapery and meticulous settings, it evokes medieval illuminated manuscripts, Studio Ghibli films or the world of Harry Potter. While asserting her taste for American comics, she remains deeply rooted in the manga tradition — a form of expression at the crossroads of art and entertainment, where women now play a prominent role.



▼ An illustration from
Kamome Shirahama's
manga *Witch Hat Atelier*.

How does one become a mangaka?

I did not really plan to become a manga artist at first. I studied design in school, and after graduating I was working as a freelance illustrator. Then, while I was active in that field, a manga editor approached me at an event called COMITIA, a Japanese fair for original self-published manga and illustration. That encounter became the turning point for me: it was the moment when I began to think that perhaps I could try drawing manga as well.

In your view, what defines an excellent manga artist?

That is a difficult question, because it is such a broad one. From a professional standpoint, an important quality is the ability to meet deadlines, but also to create work that offers a fresh perspective. At the same time, on a more personal level, every artist is trying to express something different: not everyone wants to draw the same things or explore the same themes. For that reason, I think the ideal image of what a manga artist should be can vary greatly from one person to another.

How do you see manga as a form of artistic expression?

I think manga is very much art. At the same time, it also occupies a kind of middle ground between a drawing and a novel, because it conveys stories through pictures.

But manga is also entertainment, and it is also a product. For me, that is part of what makes it so interesting: it is something mixed. It cannot be reduced to a single category.

Like yourself, more and more women have managed to make their mark in this traditionally male-dominated field. How do you explain this shift?

Japanese manga artists work in a somewhat special environment. Many creators do not use their real names, and I think that has made it possible for many women to be very active. A certain degree of anonymity can make it easier to express one's feelings openly, including deeper emotions or cries from the heart. That may be one reason why there are so

many women manga artists today, and why it feels as though their number continues to grow.

In terms of the newer generation, I no longer feel like a newcomer, but rather like someone in mid-career. Looking at recent works, I often sense anger, indignation, and very strong assertions within them. We are living in an unstable world, and many creators seem to be trying to find a place where they can stand. I feel that more and more works are carrying that kind of emotion.

“
One essential quality of a mangaka is the ability to create work that offers a fresh perspective

Your work *Witch Hat Atelier* has achieved international success. How would you introduce it to someone unfamiliar with it?

It is a story — the first volume of which was released in 2016 in Japan — set in a world where people believe that only those born with magical power can use magic. The protagonist is an ordinary

girl who does not possess magic, but who longs to become a magic user. Through a certain incident, she encounters a magic user, enters the world of magic, and gradually begins to uncover its secrets.

This is a story about possibility. Even a child without special inborn abilities can become a magic user. That framework is central to the story, but so is the emotional idea behind it: the possibility that someone who seems ordinary, or who feels excluded from a world of talent, may still find a way into it. That is one of the reasons I hope the story can speak to readers who feel uncertain about themselves.

The series has won several international awards, including the prestigious Eisner Award in the “Best U.S. Edition of International Material (Asia)” category in 2020. What do you think explains its global success?

For me, that success was completely unexpected, or rather it was a very pleasant surprise. I was genuinely shocked to be selected for such an award. Initially, I didn't truly expect the work to be recognized so widely, beyond Japan's borders.

But since I work on American comics projects, I had overseas readers and manga fans in mind from the very beginning as part



▼ Kamome Shirahama's avatar.



▼ Detail from Witch Hat Atelier.



of the audience. That may have helped shape the way I thought about the work and its potential reach.

Indeed, you also work on overseas studio projects. What is the difference between that and creating manga?

That is a completely different experience from creating manga. For me, collaborating with other people to create a work and immersing myself in manga creation on my own are two entirely different processes. The nature of the work is different, and the role I am expected to play is different as well. So the main distinction is not really between Japan and overseas, but rather between collaborative production and individual creation. Working as part of a team entails a different relationship to the project from working alone, where the process is far more inward and self-contained.

Do you think manga has become a universal language?

When I attend events outside Japan, whether in Europe, Asia, or the United States, I see many people drawing manga. One reason may be that it is such an accessible medium: you can begin with only a desk, a pen, and paper. That simplicity makes it easy for many people to enter.

Also, even if someone does not understand the language, the pictures and the stories are often still understandable and readable. I think that is one of the medium's great strengths.

“ The accessibility of manga as a medium has contributed to its vast global spread

Because of that appeal, I feel that manga is spreading very widely across the world.

Your drawing style is often praised as both universal and rooted in manga traditions. How do you approach that balance?

What I draw is fundamentally a Western-style fantasy world. In order to express that world as fully as possible, I felt that woodblock prints or classical artistic styles

might be effective. I wanted to convey the atmosphere of that era and that worldview through the style itself.

At the same time, many artists choose their tools and visual language according to the worlds they want to depict. Some create Japanese-style works with brushes, while others use digital tools or computer graphics for cyber or science-fiction settings. In that sense, style and technique are part of how a creator expresses the world of the work. I see myself as one example of that broader approach.

What projects are you currently working on?

Currently, I'm working on illustrations for the popular mobile social game Fate/Grand Order. I'm also creating novel illustrations for an upcoming work by the Japanese fantasy author Nahoko Uehashi, as well as artwork for Pokemon game cards. There are also a few other projects that I cannot yet speak about, but I can't wait for them to be announced. ■

Can artists still make a living from their art?

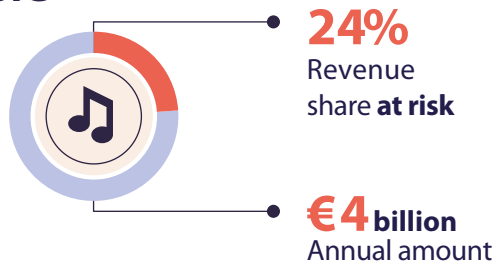
In just a few years, Artificial Intelligence (AI) has reshaped how creative works are made, distributed and valued, while exposing the limits of existing rules. The 4th edition of UNESCO's *ReShaping Policies for Creativity* report (February 2026) describes a rapidly changing landscape: new tools are spreading fast, putting creators' incomes and rights under mounting pressure. Governments begin to adapt cultural policies to this new reality. ■



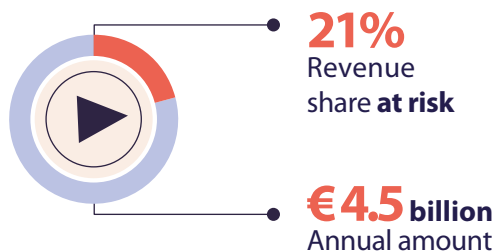
CREATORS UNDER PRESSURE

Projected revenue losses by 2028

MUSIC



AUDIOVISUAL



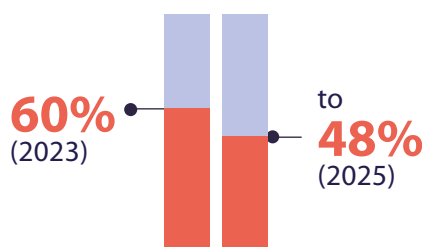
Source: CISAC & PMP Strategy, 2024

+50,000 bot-generated tracks uploaded daily

with most listeners unable to distinguish AI-generated music.

Source: Deezer, 2025

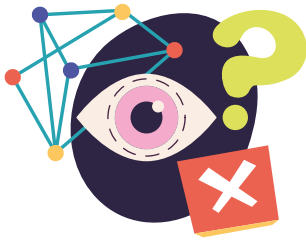
Yet, AI use in music creation dropped from



with artists concerned about a loss of personal creativity.

Source: Ditto Music

DATA GAP



OPACITY OF ALGORITHMIC SYSTEMS

- ✗ **Unauthorized use** of copyrighted works for model training
- ✗ **Limited transparency** on data used
- ✗ **Impossible to trace** which works are being exploited



LACK OF TRANSPARENCY



ONLY 48% OF REPORTING COUNTRIES track access to digital cultural content due to limited national capacities and reluctance of platforms to share user data



RISING LITIGATION



SEPT 2025:

AI Firm Anthropic agrees to pay authors **US\$1.5 billion for books** used in AI training



NOV 2025:

OpenAI **infringes German copyright** by training AI on protected songs

THE WAY FORWARD



85% of countries implemented cultural digital transformation policies

2021-2024



80% of countries are acting to **boost discoverability of local content**

2021-2024



EMERGING SOLUTIONS



Fair compensation, such as remuneration for voice, image, works use



Control: creators need to be able to govern how their works are used



Explicit permission required

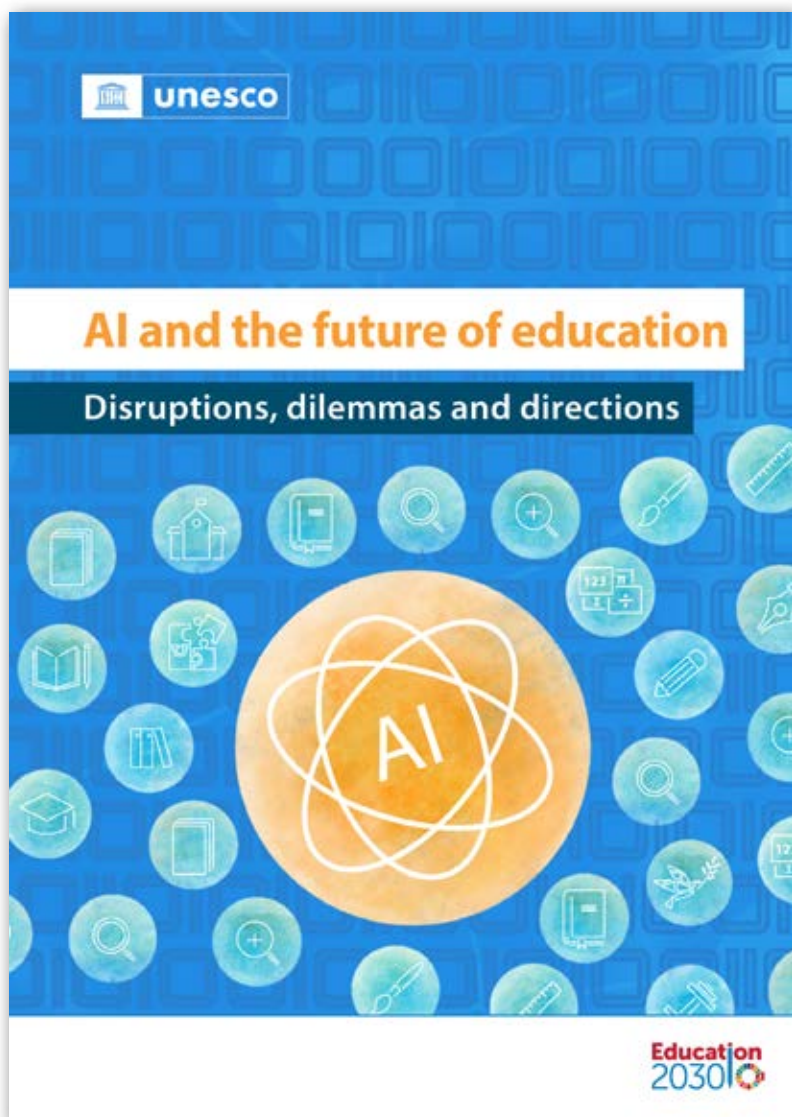


Transparency & labeling of AI-generated outputs



AI and the future of education

Disruptions, dilemmas and directions



Artificial intelligence is transforming how people learn and teach, but access to it remains unequal. While about one-third of humanity is still offline, the most advanced AI tools are mainly available to those with subscriptions, technological infrastructure and linguistic advantages. These inequalities influence not only who can use AI, but also whose knowledge, values and languages shape the systems that increasingly affect education.

This anthology brings together 21 contributions from thinkers, educators and policy-makers who examine the ethical, philosophical and pedagogical challenges of AI in education. Inspired by UNESCO's recommendations, it aims to create a global space for dialogue to rethink curricula, teaching methods and education policies, in order to build a more inclusive, equitable and ethical future for AI in education.



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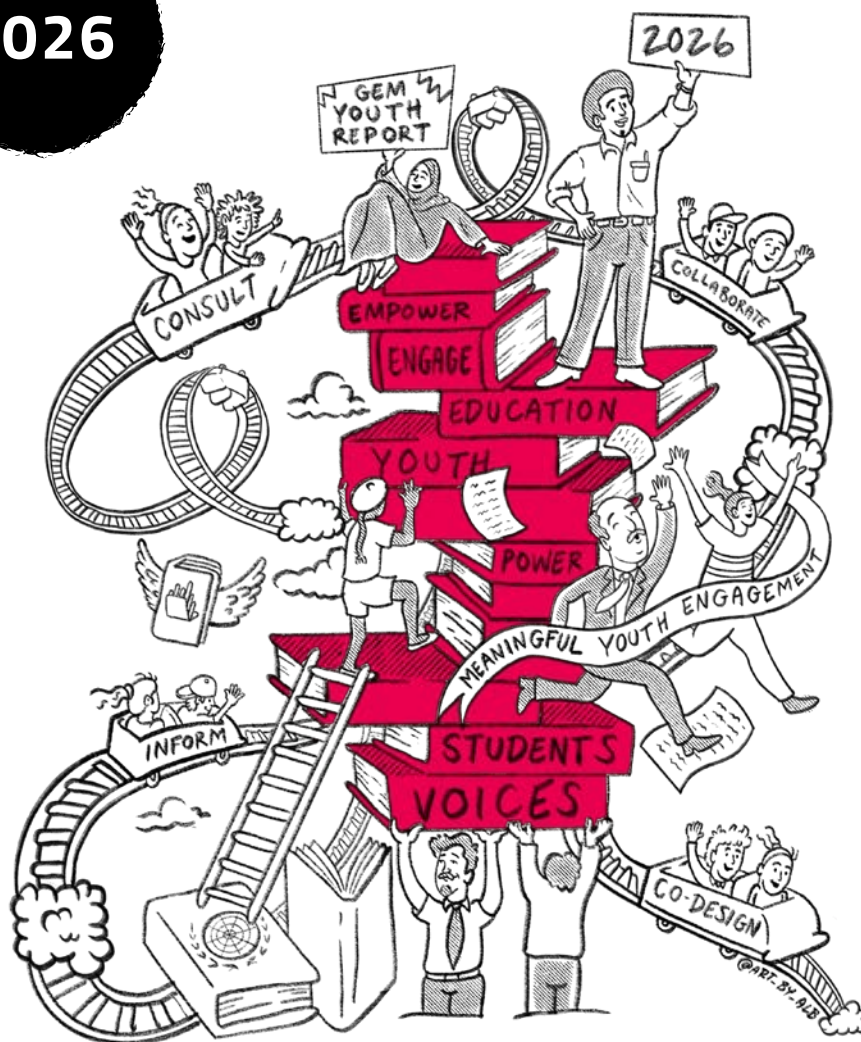
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Global Education Monitoring Report 2026



GLOBAL EDUCATION MONITORING REPORT

2026



LEAD WITH YOUTH

YOUTH REPORT



As they are engaged and aspire to shape their future, youth must be involved in education decision-making. Yet, despite some progress, their participation remains limited. The report *Lead with youth* calls for stronger mechanisms and real recognition of youth voices in shaping education policies.

Youth report
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