

2023

Technology in education: A tool on whose terms

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1. **Key findings from the 2023 GEM Report on technology in education**
2. **Overview of laws and policies on the use of technology in education**
3. **Access to technology for girls and women and STEM aspirations**
4. **Effects on wellbeing and privacy**
5. **Youth's voices**
6. **Recommendations**



1. Key findings from the 2023 GEM Report



Technology is changing but not yet transforming education

Technology use has grown rapidly
MOOC enrolment grew to at least
220 million in 10 years

**Use varies by income, education level,
teacher preparedness**
50% of lower secondary schools connected

Children can/do learn without technology
Can technology solve key education
challenges: equity? quality? efficiency?

**Many students are still not regularly
exposed to technology in school**

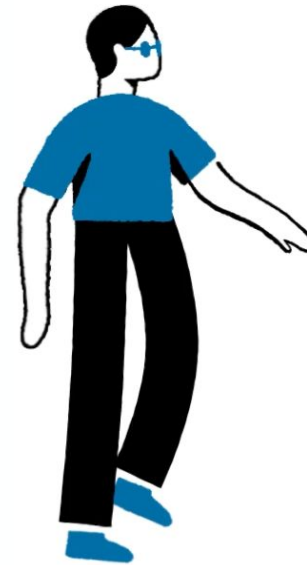


Good impartial evidence on education technology is rare

**Education technology evolves faster
than we can evaluate it**
Products change every 36 months

Technology adopted with little evidence
In the United Kingdom, 7% of companies did
randomized trials, 18% academic studies

**A lot of the evidence is generated from
those trying to sell it...**
...contradicting independent assessments



Equity: **technology offers an education lifeline for millions but excludes many more**

Radio, television, phones and internet help millions of hard-to-reach learners

In Mexico, TV increased enrolment by 18%

Technology transforms education experience of learners with disabilities...

...and potentially of those in emergencies

Right to education = meaningful connection yet access is unequal, as during COVID-19

No distance learning for 72% of the poorest



Quality: *some* education technology can improve *some* types of learning in *some* contexts

It greatly increases access to resources
...and can fill quality gaps, increase practice time, personalize instruction, help engage

but

It can be detrimental if excessive
Almost one quarter of countries ban the use of smartphones in school

It should focus on learning outcomes, not on digital inputs
Millions of laptops given without impact

It need not be advanced to be effective
In China, recorded lessons to 100 million rural students improved outcomes by 32%



Efficiency: **various issues prevent the use of technology in education management from fulfilling its potential**



Distance teacher education is efficient

Online coaching is not as effective as face-to-face but can be 80% cheaper

Computer-based and computer adaptive tests open opportunities in assessment...
...but transparent data on cost are lacking

Learning data analytics improve feedback
...but data literacy is limited, datasets are not integrated, and privacy is a concern



Sound infrastructure and clear governance structures are essential to achieve digital transformation

Countries must ensure the provision, operation and maintenance of technology infrastructure

38% of countries have a law on universal internet provision and 27% on universal access to electricity

Access to technology remains unequal at home and in schools

The share of schools with computers was 47% among primary, 62% among lower secondary and 76% among upper secondary schools

Governing education technology remains fragmented in many countries

Only 82% of countries have a department or agency in charge of EdTech. In 48% of countries, this function is led by the education ministry and 51% in LIC

Distance learning has failed to reach all learners

31% of students could not be reached by remote learning during the pandemic



Online content has grown without enough regulation

Technology helps content creation and adaptation, access and distribution
...and can drastically reduce costs

But online content is mainly produced by dominant groups, affecting access to it
92% of OER Commons content is in English

Higher education adopts technology the fastest and is transformed by it the most
Platforms challenge universities' role



Technology is often bought to plug a gap, with no view to the long-term costs

Full costs and benefits are underestimated

In the United States, only 11% requested peer-reviewed evidence prior to adoption

Money is not always well spent

Around two-thirds of education software licenses were unused in the United States

Costs are, so far, additional

Soft digital transformation in the poorest countries will increase financing gap by 50%



The cost of a digital transformation would prevent low-income countries from achieving SDG 4



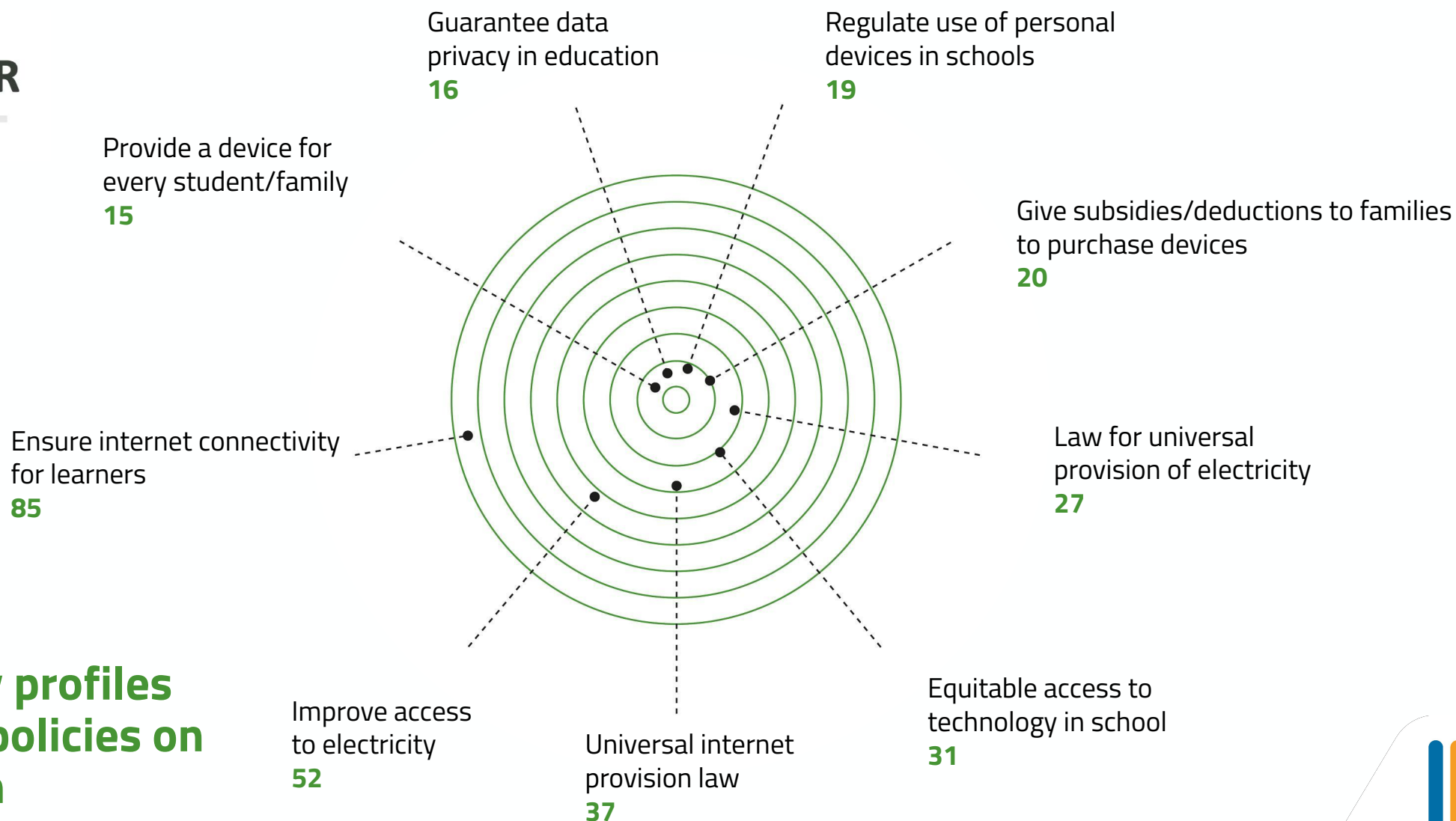
Initial investment in education technology has been estimated at up to only 25% of the total cost.



2. Countries laws and policies on the use of technology in education



Many countries lack laws, policies and regulations on the use of technology in education



200+ country profiles
on laws and policies on
technology in
education



The use of cellphones in classrooms- a heated debate

Globally, almost **one in four countries** had introduced bans in laws or policies.

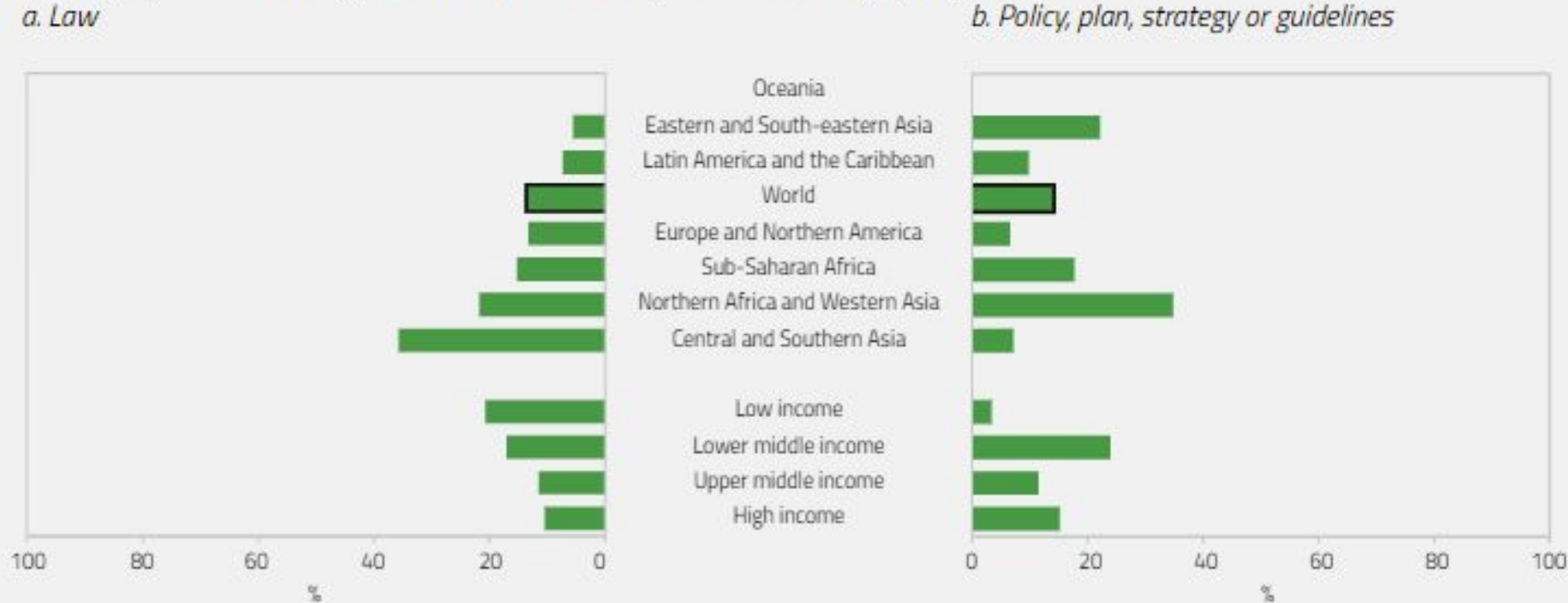
In particular, 13% of countries have laws and 14% have policies that ban mobile phones.

Since the launch of the report on August 2023 the figure has increased to almost **one in three countries**.



One in seven countries banned the use of mobile schools by law in 2022

Percentage of countries taking measures to ban mobile phones in schools, by tool, 2022



GEM StatLink: https://bit.ly/GEM2023_fig8_4_
Source: Profiles Enhancing Education Reviews (PEER).



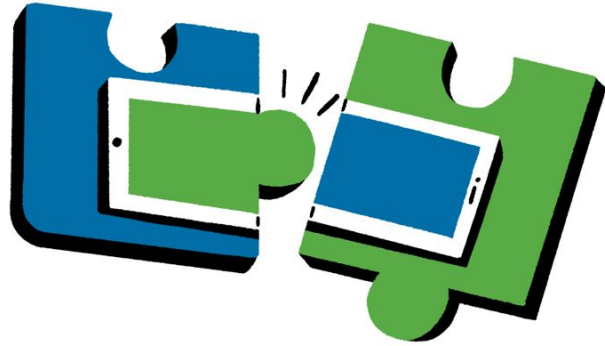
Bans take different shapes in different countries



- **France** has a ban on cellphones as they are considered a distraction for learning, except in the case of persons with disabilities.
- **Bangladesh** has a ban on teachers.
- **Uzbekistan** requires cellphones to be turned off before lessons.
- **United Kingdom** and the **Netherlands** prohibit cellphone use except for learning purposes.
- **Spain** has a ban cell phones in primary schools and limits their use to exclusively pedagogical or medical purposes in secondary schools in January.
- **Sweden** is implementing a ban on cell phones in primary schools for students in grades 1-9, even during breaks.
- In **Belgium** smartphones have been banned in over 370 French-speaking schools from this school year



What does the evidence say?



Studies in Belgium (Baert et al., 2020), Spain (Beneito and Vicente-Chirivella, 2020) and the United Kingdom (Beland and Murphy, 2016) show that banning cell phones in schools improves academic performance, especially for underachieving students.

Social media use not only negatively affects well-being, it also reinforces gender norms.

Greater interaction on social media at age 10 is associated with worsening socioemotional difficulties with age among girls, while no cross-associations were found among boys.



Excessive exposure to screens has multiple negative effects

Time spent on internet has increased over time
especially among the youngest

With multiple negative effects on mental and
physical health and on well-being

But also on learning through for example
increased distraction



Students need to learn the risks and opportunities that come with technology and not be shielded from them entirely.

But countries need to give better guidance on what technology is allowed in school and what is not, and on their responsible use.

Only technology that has a clear role in supporting learning should be allowed in school.



3. Girls' access to technology in education and STEM aspirations

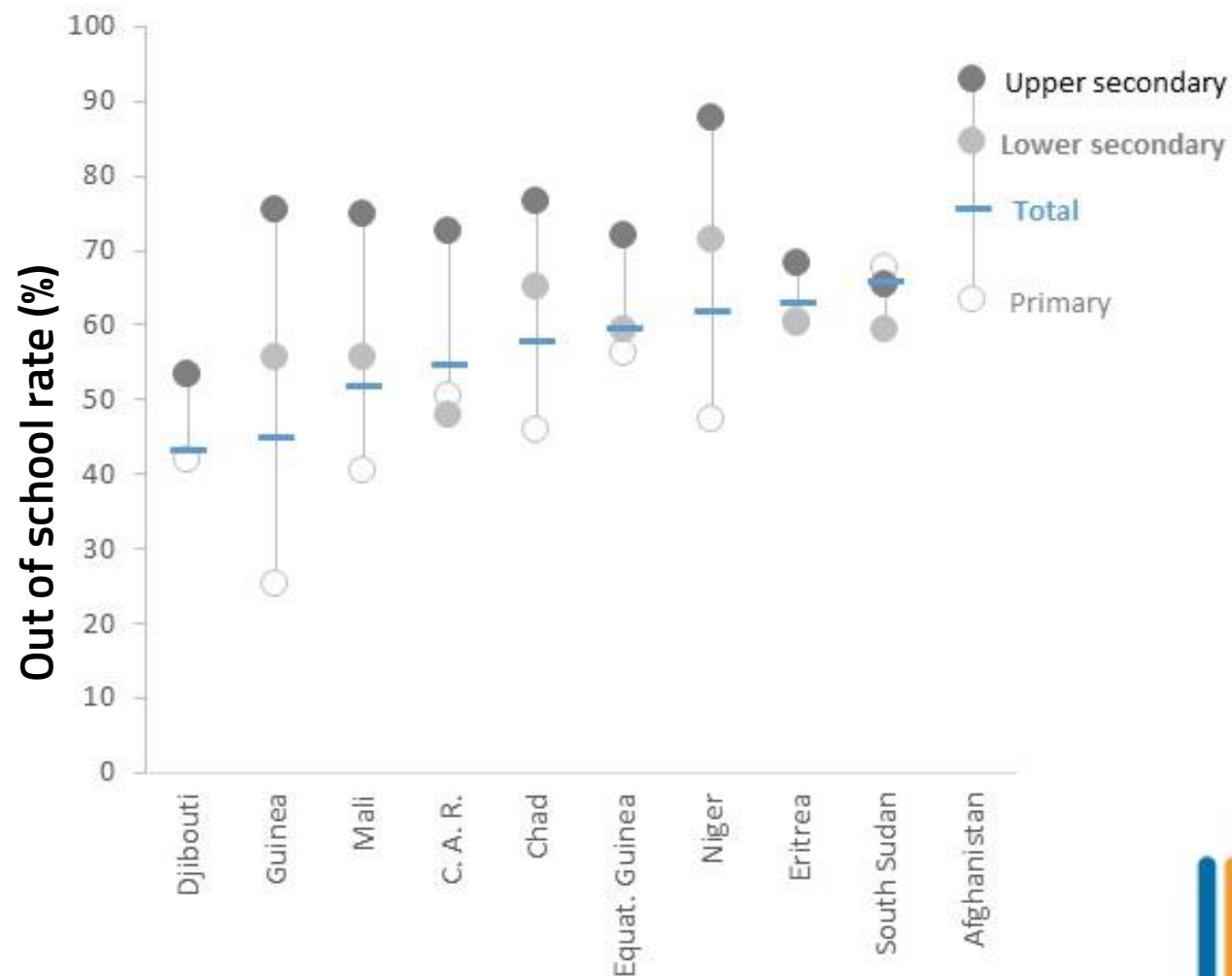


Millions of girls continue to be excluded from education

The number of out-of-school girls fell by 41% between 2000 and 2022

In sub-Saharan Africa, more girls of primary and secondary school age are out of school than boys

Apart from Afghanistan, 9 of the 10 countries with the highest education exclusion rates for girls are in Africa



Gender disparity in learning varies among average and top students

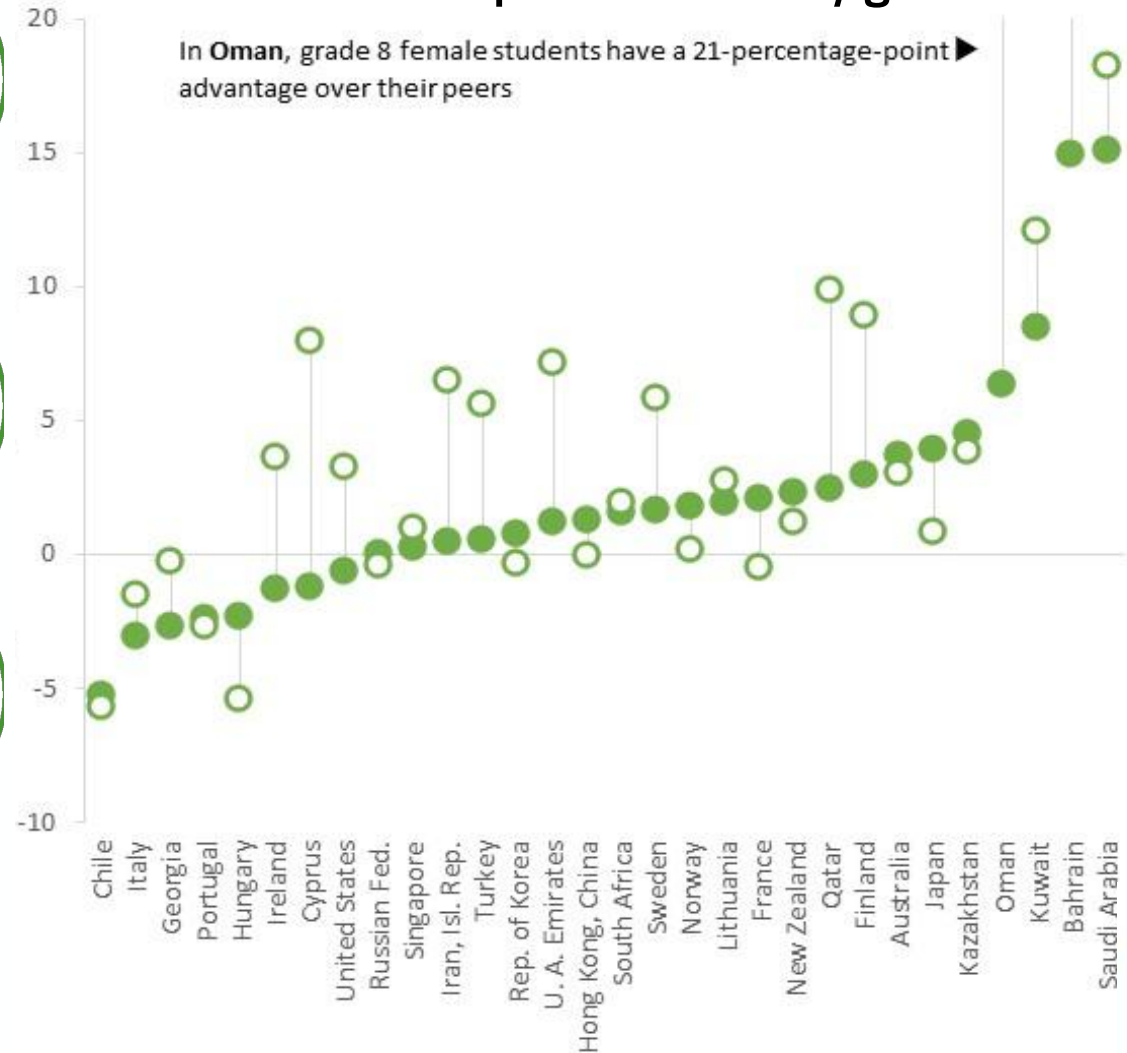
Globally girls perform better at reading
For every 100 boys, there are 115 girls proficient at reading in lower secondary

Boys perform better than girls in mathematics in primary, but not in lower secondary education.

In science, girls already have an advantage in grade 4 which more than doubles by grade 8

Science performance by gender

In Oman, grade 8 female students have a 21-percentage-point advantage over their peers



Girls and women continue to face barriers in access to technology

Barriers in access:

81% of men and 75% of women own a mobile phone

Social and cultural barriers:

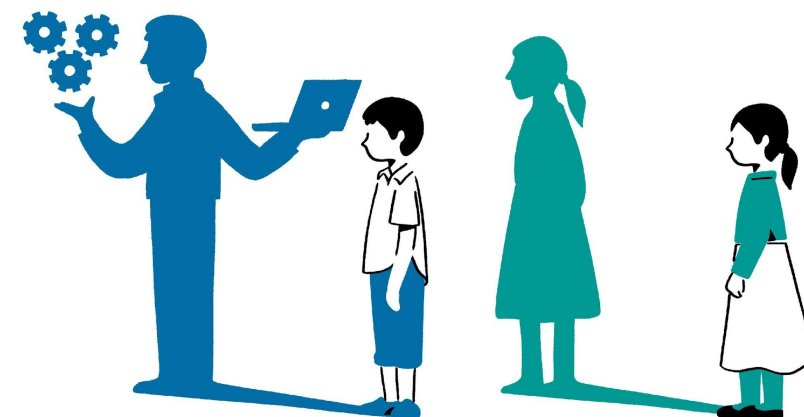
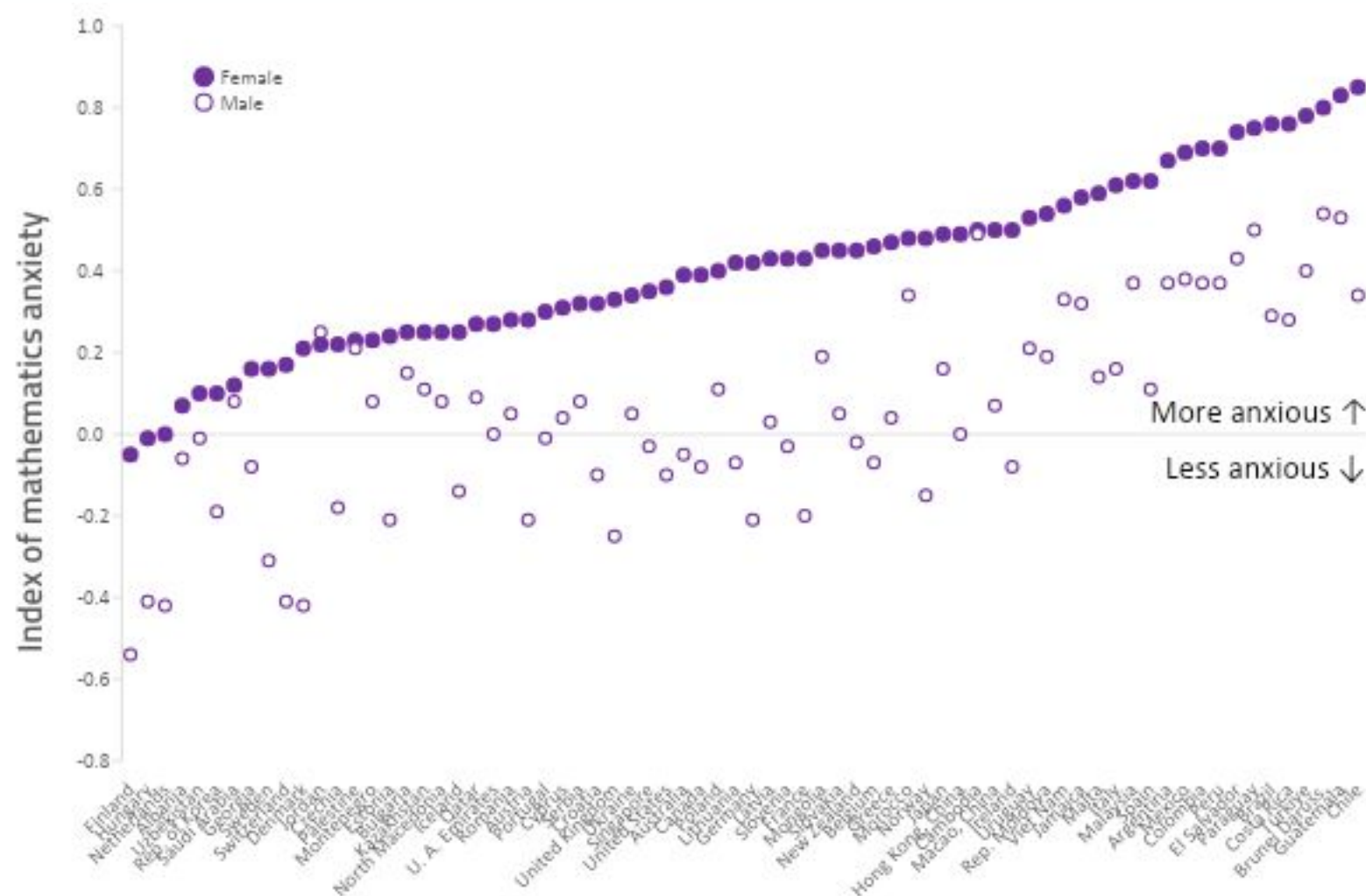
244 million fewer women have no access to the internet

BUT... ICT can enable access for girls in crisis:

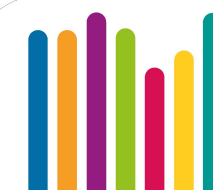
Radio (Afghanistan); Tablets (Jordan), Mobile phones (Nigeria); Learning apps (Kenya)



In mathematics, girls do as well as boys – but not at top levels - and they are far more anxious about mathematics than boys



Source: PISA database



Fewer women in STEM courses = fewer women in STEM jobs

Women are far less likely to pursue STEM careers

Women held <25% of science, engineering and ICT jobs in 2022; 20% of technology positions in companies

Lack of women in tech workforce = loss to society

17% of patent applications filed by women globally

The digital transformation is led by men

Women constitute only 26% of employees in data/AI and 12% in cloud computing in leading economies

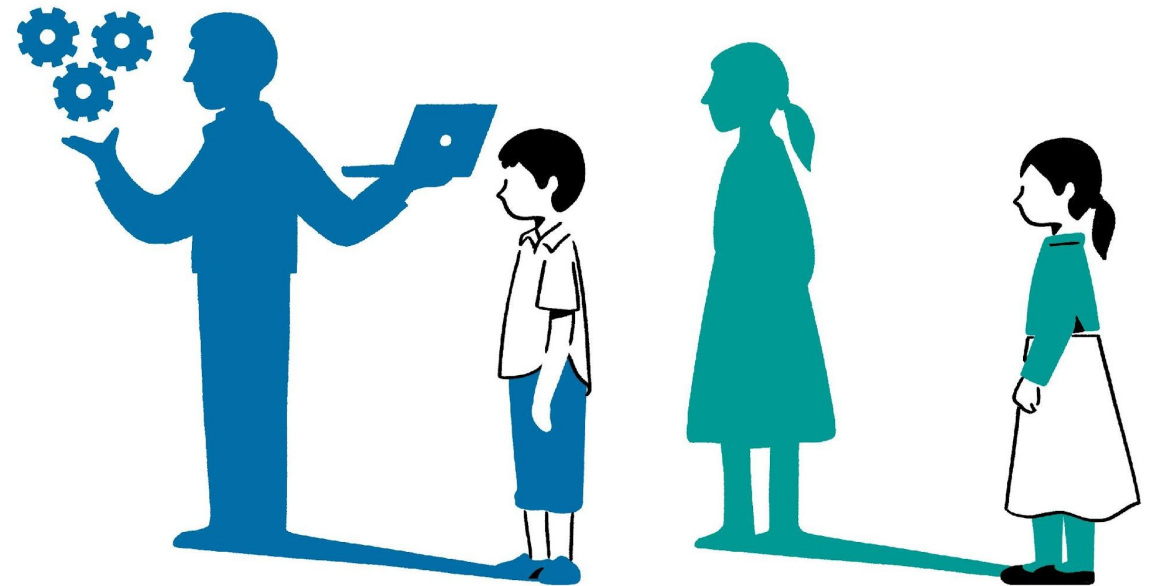


Gender and social identities and stereotypes shape STEM aspirations

Gender stereotypes are generated and perpetuated at home and in school

Female teachers can be a positive influence

Biased gender norms and stereotypes in curricula and textbooks influence girls' choices



4. Effects on wellbeing and privacy



Social media negatively affect girls' wellbeing

Girls proven to be more vulnerable

Girls twice as likely as boys to suffer an eating disorder, which is exacerbated by social media

Technology facilitates cyberbullying

37% of girls / 29% of boys concerned by online harm; image abuse, deep fakes are rife

There are consequences on learning

Greater interaction on social media at age 10 leads to socio-emotional difficulties for girls



5. Youth perspectives





unesco

Global Education
Monitoring Report

RESTLESS
DEVELOPMENT

CONSULTATION PROCESS involving over *1,500 youth and students* across *8 regions*



YOUTH-LED REGIONAL CONSULTATIONS

**RESTLESS
DEVELOPMENT**

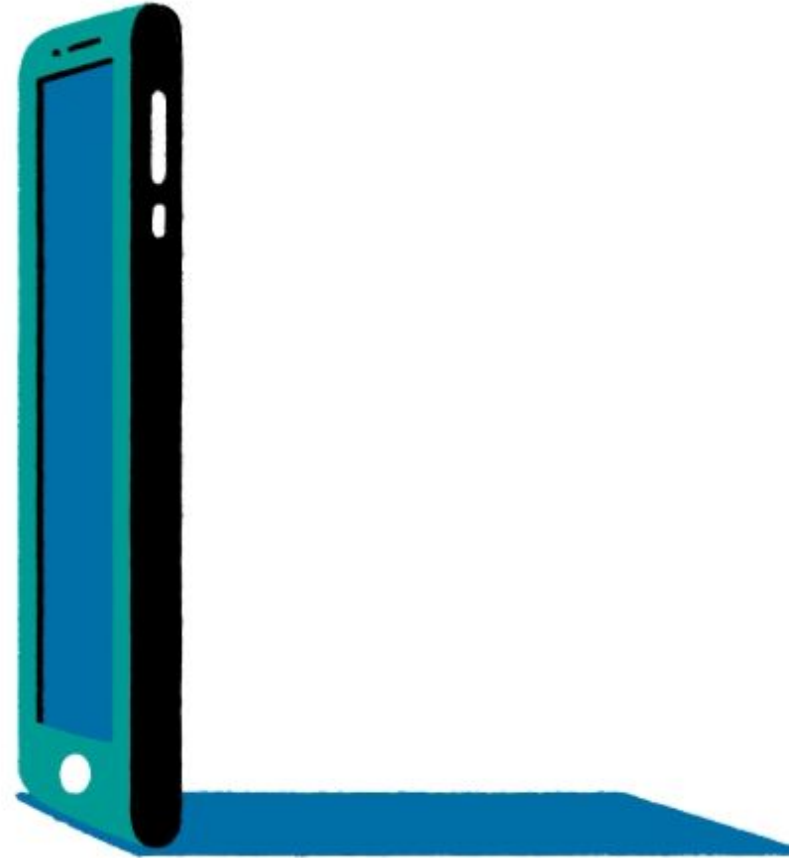


6. Recommendations

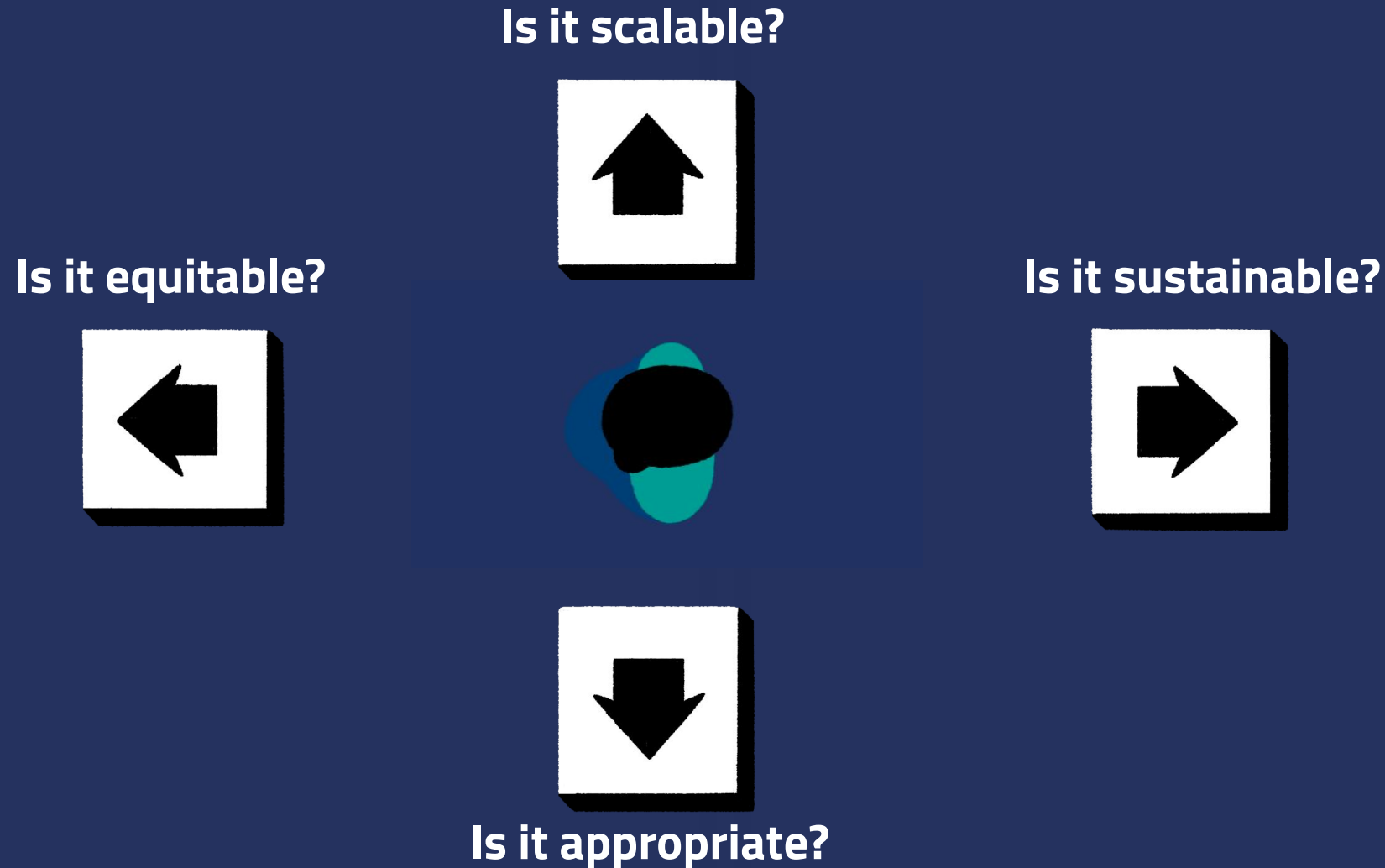


Consider four trade-offs when using technology in education

1. Personalization and adaptation
vs social dimension of education
2. Inclusivity
vs exclusivity
3. Commercial interest
vs common good
4. Short term efficiency
vs long-term costs



Use a compass when deciding to deploy technology in education





Is this use of education technology appropriate for context?

Strengthen education systems and align with learning objectives



Reform curricula for digital tools that improve learning reflecting how students learn

An AI-based system no better than traditional teaching

Design, monitor and evaluate policies with the participation of teachers and learners

41% of senior leaders consulted in the United States

Ensure solutions are designed to fit the context

43% of lower secondary teachers felt prepared to use technology for teaching even after training



Is this use of education technology equitable?

Avoid benefitting privileged and marginalizing other learners

Focus on technology supporting the marginalized

In India, satellite teaching in rural public secondary schools improved mathematics and science scores

Set national targets on meaningful school internet connectivity by 2030

Benchmark process a landmark in SDG 4 monitoring

Promote digital public goods in education

UNESCO and UNICEF Gateways to build international consensus about norms and quality for platforms





Is this use of education technology scalable?

Take decisions with evidence of short-term costs and benefits



Establish bodies to evaluate education technology

In the United States Clearinghouse, only 2% of products had 'strong or moderate evidence of effectiveness'

Estimate total cost of ownership and implementation

Initial investment in education technology accounts for just 25% of eventual total cost

Ensure transparency on public spending and terms of agreements with private companies

Decentralization of decisions is difficult for schools



Does this use of technology support sustainable education futures?

Take decisions with evidence of long-term costs and benefits

Establish broad curriculum framework of digital skills

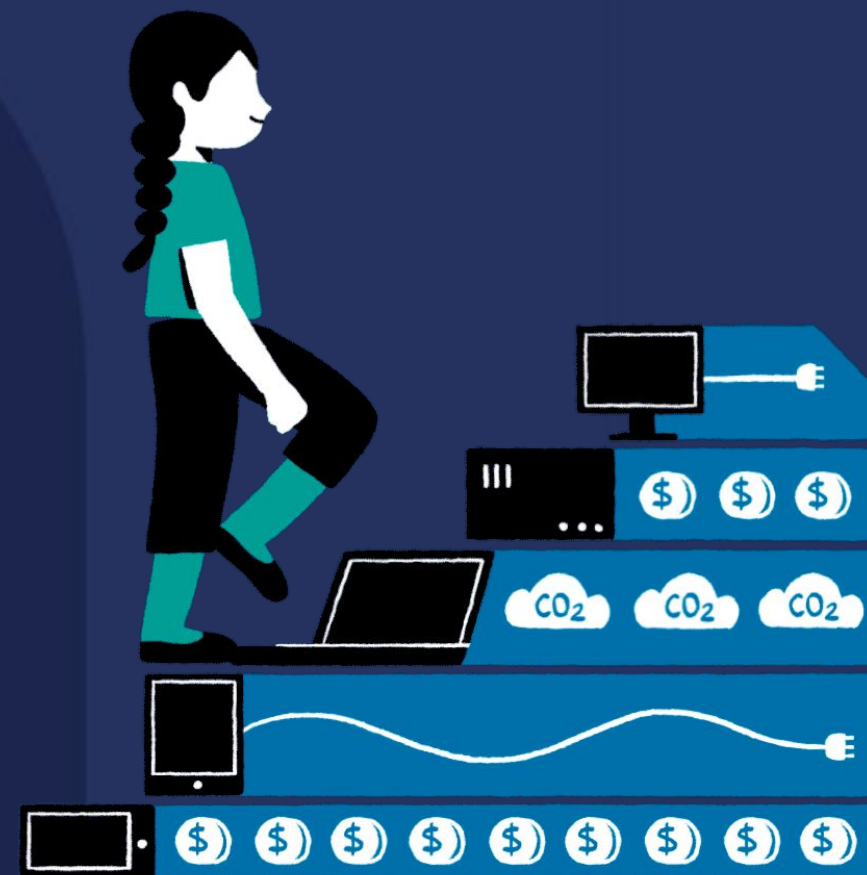
5% of students with strong but 24% of those with weakest reading skills were misled by phishing emails

Protect learners' and teachers' human rights, well-being, safety and privacy

89% of products reviewed collected children's data

Consider material and energy implications

Extending lifespan of all laptops in the EU by a year is equivalent to almost 1 million cars off the road

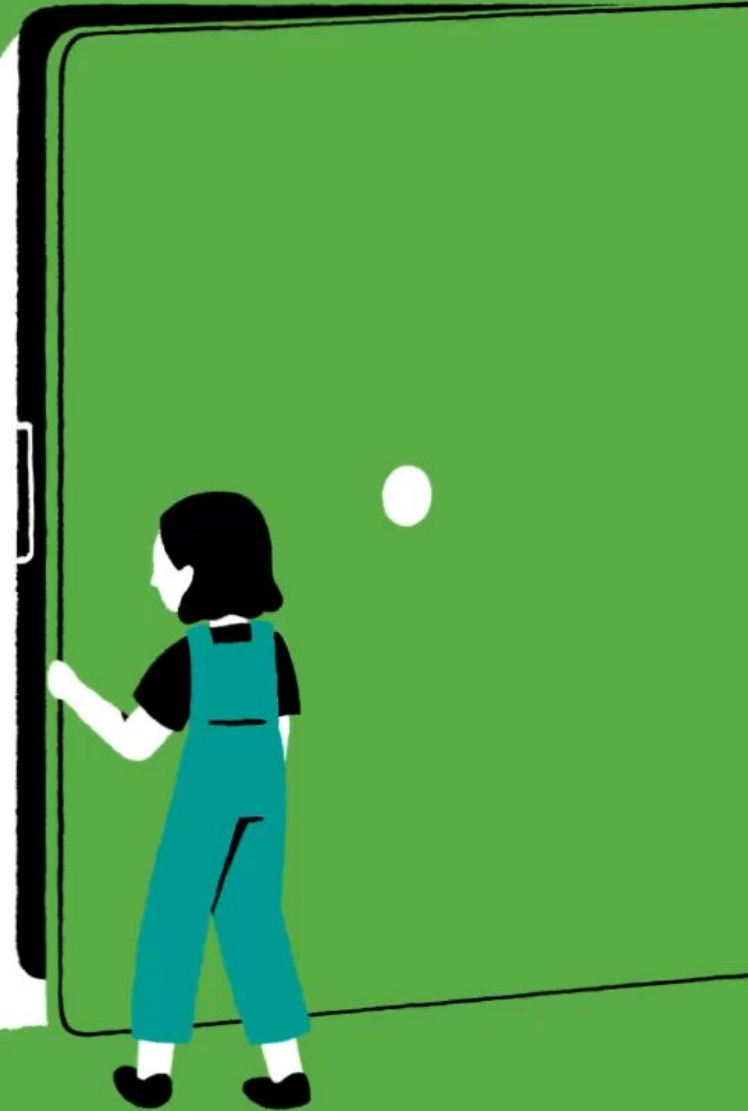


#TechOnOurTerms

Keep learners' best interests at the centre of a framework based on human rights

Focus on learning outcomes, not digital inputs.

Digital technology should not be a substitute for but a complement to human interaction



Thank you!

#TechOnOurTerms



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gemreport

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