



Consultation on the 2023 GEM Report on technology and education: Summary

23rd Feb 2022
11-12.30pm



This document summarizes the discussion and key questions raised during the online consultation of the 2023 Global Education Monitoring (GEM) Report Concept Note on technology and education. The consultation included academic experts, was hosted by the Centre for Research in Digital Education and the Comparative Education and International Development (CEID) Research Group at the University of Edinburgh and took place on February 23rd, 2022.

The consultation drew from a joint response to the Concept Note that was submitted by the Centre and CEID Research Group, which can be accessed [here](#).

This summary document was compiled by CEID Research Group member William C. Smith, based on notes shared by members Fatih Aktas, Patrick Brobbey, and Yuemiao

Consultation Agenda with Summary Notes

- **Welcome by William C. Smith, University of Edinburgh**
 - William introduced the opportunities to input to the report, including this open synchronous online consultation with experts and continual online asynchronous opportunities to provide input.
 - Questions to for participants to consider during the presentations were introduced including the role of technology and its challenges, the potential negative impacts of technology, and the facilitation of access to ensure no gaps in the use of technology in education, among others.

- **Presentation of Concept Map by Manos Antoninis, GEM Report**
 - Manos provided a brief introduction to GEM Report, its mandate and roles, and reviewed the recent and future reports in the series.
 - Introduction to the 2023 GEM Report Concept Note
 - The concept note is the foundational document. It covers issues such as technology (infrastructure; subject; methods for planning and learning; and backdrop of social and cultural lives) and SDG 4. It involves challenges between technology sceptics and utopians. How do countries deal with the challenges of today? Research on technology today is challenging – providers of technology complicate its research.
 - Our Approach: We ask: what’s behind general big issues behind education and technology as an educational tool; what are the minimum requirements for fulfilling the promise of technology to education; and technologies other than ICT – e.g. energy. Overall we are open to multiple perspectives.
 - *Education challenges: what is the education we want, and can technology help?* There are four themes related to this that we focus on:
 1. **Access, equity, and inclusion:** Access to content includes how is the content curated, how people are supported to select the

content. Groups represented include disadvantaged groups in remote areas, displaced persons, refugees, people with disability, and different time periods and age and gender groups. We consider that technology may be low cost for accessing knowledge but how can we ensure that the content of education is easily available and accessible at a cheap price.

2. **Quality:** Basic skills: help disadvantaged groups to at least achieve basic levels of education and minimum learning outcomes. We seek to provide new skills that technology demands. We plan to use the Digital Competence Framework by European Commission, which includes media literacy, digital content creation, collaboration, and problem solving.

3. **Technology development:** Our attention is on primary and secondary education. How do governments conceptualise the role of education system in supporting tech development? How are government education development strategies changing over time? Countries need to adapt. What is the role of technology in this adaptation?

4. **System Management:** Technology use: as a study data (Learning Assessment Data) and make and administer policies. How does government decide where to invest, what system to use, and how to procure and finance these resources? We will look at policies and legislation around answers to these questions and governance and regulation policies and inter-government regulations. We'll also consider protecting users from risk. As well, we'll support all teachers to teach, use and deal with technology.

- Encouraged participants to send comments, questions, resources, and consider call for expressions of interest

- **Joint Response Panel (University of Edinburgh)**

- William C. Smith – introduces the joint response and two of the questions raised in the response that were missing in the concept note
 - *What education problems are unable to be addressed by technology?*
 - *What education problems are exacerbated by technology?*
- Michael Gallagher
 - Overview
 - Things are missed in the concept note that technology cannot be seen as a solution for all. Technology can't be seen as a solitary and instrumental actor in education but an interdependent variable that brings with it questions around access and equity. It has cascading impact on a number of issues.
 - Technology itself is a complex system, and more complex when coming to education
 - Technology engenders commercial imaginaries that can amplify rather than mitigate educational and colonial divides. It brings in

narratives of the use of technology. What is education meant to be, who is education meant to be for.

- It can fail to account for and even amplify existing social stratification.
 - The interplay between policy and technology can sometimes erode local institutional agencies.
 - *What educational problems are worsened by technology?* Low-fee private schools, academies in a box, and market creation. Poorly trained facilitators rather than teachers. These have to change. The teaching profession is hurt more in these localised spaces.
 - *What problems are technology unable to be address?* Training teachers, blended learning, and partnerships. There is no shortcut for training teachers especially when ICT is involved. They'll be best facilitated by technology and learning its use. Teacher training programmes can help. Public-private partnerships: zero-rated (e.g. the telecoms wave the cost of educational resources). Offline/online hybrids or blended learning: partnerships are more sustainable in bringing in technology. Hybrid learning should be made to run offline and through particular routers.
- June Xu
 - Technology is not neutral and is value laden.
 - Digital technology provides a lot of potential, but also raises digital ethics issues, regarding equity and equality
 - *Intercultural digital ethics*: How to design governance framework for digital technologies tailored to the ethical values of different cultures, while harmonising these frameworks. Take a balanced inter-cultural approach. Move from the Eurocentric/wester-centric ethical models by making them pluralistic.
 - *Global Pressure and Local push-backs*: has technology helped solve the problem of education inequality or educational divide? Some scholars claim that it reinforces the divide. Some have concerns about the student's learning motivation and learning outcomes. In some cases, there's been pushbacks, e.g. from the Chinese government, to regulate the influence of the drawbacks of capitalisms fostered by private ed-tech companies.
 - Ben Williamson
 - *Investment in edtech has been increasing*. This is not just about investing in educational products but also funding transformative visions. Not just an investment in the product but also investing in forms of education, so political choices are involved in deciding investment.
 - Venture capitalists are investing a lot in transformation vision, with the intention of bringing it into being. This vision is data rich analytics, from which we have artificial intelligence (AI), machine learning, and big data etc. There's a political decision to be made on which programmes investors wish to put their resources into.
 - *Materialising the market imaginary*: the ecosystem of digital platforms is vastly expanding. They include data infrastructures and cloud architectures. There are barriers such as inter-platform

operability. It is important to ensure the breaking down of data silos between platforms (Blackboard) and Third-party platform plug-ins and new data infrastructure by default (Google Classroom). There's also a market place of platform add-ons.

- *An evolving Market and metric logic*: now investors are funding a vision of education where EdTech market is viewed as the most appropriate mechanism. Now there're issues of performance-based accountability and efficiency extended through digitalisation and datafication and challenges of understanding how automation and AI shape decisions and practices in education as well as their effects. There's new data-rich, algorithmic mechanisms for predicting outcomes.

- **Open Discussion**

- 7 questions were shared with participants who were invited to comment on any of the 7 questions, respond to the presentation or panel, or share their own insights and resources.
- 7 questions (5 from Concept Note + 2 from Joint Response) included:
 - What do we know about the role of technology in addressing each of the education challenges identified with respect to access, equity and inclusion; quality; technology development; and system management?
 - What do we know about the potential negative impacts of technology on education challenges in each of these areas?
 - How do countries facilitate access to technology to ensure there are no gaps between different learners and schools?
 - How do education systems embed the use of technology through reforming curricula, redesigning learning materials and supporting teachers?
 - How can the negative consequences of the use of technology be addressed in education and in the way they impact education?
 - What education problems are unable to be addressed by technology?
 - What education problems are exasperated by technology?
- Below we cluster the open discussion conversation by themes, contributions identified by initials. See participant list for details.
 - *Importance of socio-economic context and local adaptability*
 - Need to consider socio-economic context when examining education and technology. Would like to see the impact of context addressed more by the report (FM).
 - Often (in my observations) inequality is conceptualised as something "within" education, rather than as a "context" for education (FM)
 - Consider local adaptations to education technology and the lessons to be learnt from them. (PB)

- The context very much matters. Local adaptability is also very important. (ACD)
- *Issues of power, equity, and use*
 - How is a technology designed, and for whom is it designed? (FM)
 - Regarding technological infrastructure, the crucial aspect is not just hardware. This matters very much because it is important to think of what form it comes in and who owns and controls technology. Regarding input and context, digital data is central: who collects, controls, and use and aggregate the data? (JK)
 - How does EdTEch operate, and by who/what? Who innovates, and where do investments go? Mainly US and China but some other countries/regions (i.e., Latin America) are missing. (JK)
 - Access, equity and inclusion: consider parity of participation. Hence, an important sub-topic is the role of technology in terms of epistemological access linked to algorithms and search engines. It's an increasingly important area. Full participation is important. (LC)
 - We plan to deal with the big issues – equity and inclusion – related to SDG 4. We'll tackle infrastructure. Open content will all be dealt with. So will challenges and barriers to vulnerable groups be addressed. How availability of data means for privacy and safety too. These are very prominent in the report. The nature proprietary rights of platforms will also be addressed. Who's involved in planning for education technology too will be represented. How to make it more participatory will be considered. (ACD)
 - I think it's precisely the global nature of the report that makes the concerns being raised here so crucial. Without resources for regulating (or preempting) the commercial interests at play, then any effort to expand "access" to hard/soft tech infrastructures around the world also tethers those places/schools to the whims of powerful market forces (and their attendant "imaginaries" for what education ought to be/look like) that often have no accountability to, or long-term investment in, them. (PN)
- *Teacher training and support*
 - Apart from focusing on teachers' technology competence more focus on justice/equality/equity competence (FM)
- *Education materials*
 - The micro education environment is important and the commercialisation and privatisation of textbooks needs to be considered (TK)

- *Socio-emotional learning, creativity, and other skills*
 - Socio-emotional learning is missing and is especially important in post-Covid times. Can technology assess socio-emotional learning and creativity? (AB)
 - The report does cover this but not as detailed as used in this commentary. Social emotion learning is not only being considered for assessment but also as a skill related to reading, health education, and mathematics. It could potentially be covered there. (MA)
 - Social-emotional learning becomes technologized and commercialized very rapidly. There is a risk of capturing highly private data, which we need to be cautious about while measuring social-emotional learning. (BW)
 - EdTech Hub will be hosting a discussion on SEL and EdTech on the 23rd March. (AB)
 - Re: SEL The think piece addresses this to some degree. These are skills that are difficult to measure but there are a number of initiatives and ways of using tech (some of which are controversial):
<https://unesdoc.unesco.org/ark:/48223/pf0000378951/PDF/378951eng.pdf.multi>
 - Digital skills are broader than the definition by EU. (JK)

- *Governance*
 - It is not only governance with data, but also governance of technology and data. There should be strong policies regulating these areas. Issues around privacy are important. At the moment, data is viewed as civil human right or intellectual property. We should understand aggregated data as a collective good. Everyone should understand transparency of data. Informing and educating citizens to participate in the governance of technology education is in order. (JK)
 - Connecting access with governance. To what extent does the governance have institutional capacity? Institutional capacities are not always well-prepared. (CC)
 - Concerns about corruption (PB)
 - Corruption is being addressed (ACD)

- *Modalities*
 - Pay attention to non-digital technologies that have been very useful in these times. A multimodalities approach needs to be adopted. (LC)
 - Types of technology example (LC)

Types of technology

Types of technology	Examples
Analogue including electronic	pencil, paper, overhead projectors
Digital Microprocessors, binary numerical systems representing data One to one, one to many	Stand-alone computers, CD ROMS, DVDs
Networked digital connected, social, many to many, dependent on connectivity	social media, learning communities
SMART (Self-Monitoring, Analysis and Reporting Technology) Uses some sort of AI artificial intelligence or automation to interact, share, inform, monitor or modify <u>users</u> behaviour and data.	smart boards, automated attendance system, tutor bots

- The report will look at the terminology. Technology is not just digital; low-tech (e.g. radio) or high-tech initiatives are covered in the report. (ACD)
- *Potential themes to consider*
 - The discussion points to several debates associated with themes in the study of international development. These themes include: Co-delivery; Government-driven versus market-driven development (in this case, technology and education); competitive advantage; corruption and trickledown effect; top-down and bottom-up approaches; and access, utilisation, and sustainability. Revisiting these general themes is useful, in that they may guide us to issues to consider. For example, the utilisation approach to development/poverty tells that availability and access are insufficient when several people cannot use the intervention. E.g. there're media reports showing that primary school pupils in certain African communities have never seen a computer; rather, their idea of it is from drawings on blackboards. How can these pupils realistically use available and accessible computers? How can we sustainably address this utilisation gap for present and future generations? Also, how will the various recommendations be tranformed from ideas into policies and programmes? E.g. how do you realistically speak to sociocultural (e.g. traditional and religious) perceptions for and against the use of technology? (PB)
- Areas needing clarification
 - There seem to be some mishaps in the concept note – such as saying there is unlimited storage capacity on p5 – storage is far from unlimited. It requires servers, cooling systems and so on, which have important environmental impact. (JK)
 - It would be useful to provide a definition or conceptualization of what is meant by education technology. And then recognize

the complexity at different levels – by type of ownership and control, by uses and potential abuses, and so on. (JK)

- **Resources shared in the chatbox**

- www.docs.edtechhub.org; contains an array of academic and grey literature (including many country-specific resources) that can be harnessed to add granularity (TK)
- Report 'Reimagine Education maps global innovations in EdTech' available at <https://centralsquarefoundation.org/re-imagining-education/> (GG)
- <https://unesdoc.unesco.org/ark:/48223/pf0000372786> (Rethinking pedagogy: exploring the potential of digital technology in achieving quality education
Corporate author: Mahatma Gandhi Institute of Education for Peace and Sustainable Development [48]) (FM)
- <https://www.codedbias.com/> (FM)
- MGIEP report was also "linked to" UNESCO (FM)
- Rafalow, M. H. (2020). Digital Divisions. How Schools Create Inequality in the Tech Era. University of Chicago Press. (FM)
- Sims, C. (2017). Disruptive Fixation: School Reform and the Pitfalls of Techno-Idealism. Princeton University Press. (FM)
- <https://srheblog.com/2022/02/16/mapping-financial-investment-flows-in-digital-higher-education-a-focus-on-data-rich-operations/> (BW)
- <https://journals.sagepub.com/doi/abs/10.1177/20427530211022951?journalCode=ldma> (PN)

February 23 rd Online Consultation Attendee List	
Name	Affiliation
Sheila Jagannathan	World Bank
Phil Nichols (PN)	Baylor University
Mary Burns	Education Development Centre
Sara Hennessy	Cambridge/EdTech Hub
Laura Cserniewicz (LC)	University of Cape Town
Janja Komljenovic (JK)	Lancaster University
Felicitas Macgilchrist (FM)	Georg Eckert Institute
Niall Winters	Oxford University
Gouri Gupta (GG)	Central Square Foundation
Akanksha Bapna (AB)	EdTech Hub
Tom Kaye (TK)	EdTech Hub
Samantha-Kaye Johnston	Oxford Uni Centre for Ed Assessment
Cristobal Cobo	World Bank
Ben Williamson (BW)	University of Edinburgh
June Xu	University of Edinburgh
Michael Gallagher	University of Edinburgh
William C. Smith	University of Edinburgh
Yuemiao Ma	University of Edinburgh
Patrick Kwasi Brobbey (PB)	University of Edinburgh
Shikha Kumari	University of Edinburgh
Fatih Aktas	University of Edinburgh
J.J. Miranda	University of Edinburgh
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Anna Cristina D'Addio	GEM Report
Laura Stipanovic	GEM Report
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