

**The Hearth Lecture Series**  
**Trendspotting: Why Things Matter**

**Session: 26<sup>th</sup> September 2023**

**Ed Tech: The Revolution That Is Constantly Arriving Yet Never Arrives**

The United Nations Human Rights Council Special Rapporteur on the right to education urged the global community to frame digital technology around every person's human right to public, free, quality education (April 2022). The realm of education has been inundated with promises of transformative change through integrating educational technology, or 'Ed Tech'. As we navigate the unprecedented acceleration in technology and as countries endeavour to identify the optimal entry and investment points in Ed Tech to leapfrog over continuing challenges to respective national education systems, questions abound regarding its appropriateness, relevance, and cost-benefit. Has Ed Tech lived up to the hype, or is the long-awaited technological breakthrough still around the corner, as always, almost attainable but not quite there? The significance of equipping learners with technological skills to thrive in a world propelled by an excessive rapidity of social change cannot be overstated. However, there is a distinction between learning technology and learning through technology. What concrete and unbiased evidence supports the notion that learning through technology is imperative for students? What educational challenges are we striving to address, and is Ed-Tech the ideal tool for solving these challenges?

The Ed-Tech landscape underwent a seismic shift due to the pandemic, bringing it to the forefront of global and national education policy discourses. Was this an emergency necessitated makeshift, or would traditional educational methods and the role of educators never be the same again? Despite the proliferation of remote learning, the pandemic exposed staggering learning losses and a decline in the socio-emotional well-being of students. This raises critical questions about Ed-Tech's promise of democratising and personalising education.

In this comprehensive exploration of Ed Tech, our panellists endeavour to shed light on these multifaceted questions, aiming to unravel the paradoxes surrounding technology integration in education and raise questions for our audience to reflect on a more informed path forward.

**Excerpts from Recommended Readings**

**1. UNESCO Digital Learning Week 4-7 September 2023**

UNESCO takes a humanistic approach to ensure that technology will be designed to serve people by internationally agreed human rights frameworks and that digital technologies will be leveraged as a common good to support the achievement of SDG 4 – Education 2030 and to build shared futures of education beyond 2030. UNESCO guides international efforts to help countries understand technology's role in accelerating progress toward the education goal.

To leverage digital technologies in education, governments and their partners must agree on norms around open, public, and secure hybrid educational spaces. Through the co-creation of common frameworks, we can leverage emerging digital opportunities to improve the quality of pedagogical practices and strengthen the management of increasingly hybrid learning systems, focusing on promoting education, social equity, and inclusion—more on UNESCO's approaches to technology in education, data, knowledge, and governance frameworks [here](#).

**2. UNESCO, G20 Indian Presidency Education Working Group, Education Policies and Programmes in G20 Countries, June 2023.**

Leveraging digital resources and technologies to accelerate progress in education is one of the four priority areas proposed by the Government of India under the G20 Education Working Group. Digital resources are particularly beneficial for learners in rural areas and those displaced by natural disasters. This report highlights the role of technologies in ensuring learning continuity during the pandemic, the growing trend towards blended learning, and the need for countries to identify entry points and levels of investment for their digital transformation while considering their level of readiness, particularly for emerging technologies and the potential risks. Five components are recognised for advancing tech-enabled learning:

- (i) Coordination and Leadership
- (ii) Content and Curriculum
- (iii) Connectivity and Infrastructure
- (iv) Capacity and Culture
- (v) Cost and Sustainability

The report is available [here](#).

**3. UNESCO. 2023. Global Education Monitoring Report Summary 2023: Technology in education: A tool on whose terms? Paris, UNESCO.**

- (i) Good, impartial evidence on the impact of education technology is in short supply.
- (ii) Technology offers an education lifeline for millions but excludes many more.
- (iii) Some education technology can improve some types of learning in some contexts.
- (iv) The fast pace of technological change is putting strain on education systems to adapt.
- (v) Online content has grown without enough quality control or diversity regulation.
- (vi) Technology is often bought to plug a gap without considering the long-term costs.

The report is available [here](#).

**4. Ryan Nagelhout, Academic Resilience in a World of Artificial Intelligence, 24 August 2023, Harvard Graduate School of Education.**

Academic resilience in a world of artificial intelligence can be achieved if we learn how AI works to demystify its impact and potential, create a process-oriented, not product-oriented curriculum, make the curriculum more resilient to AI's advances, clarify policies, and be malleable. Text accessible [here](#).

**5. How ChatGPT could help teachers and lower the cost of college, 15 June 2023, The Economist.**

This article argues that the focus on ChatGPT killing the 'college essay' is misplaced and illustrates ways AI can be a teacher's friend and lower the costs of higher education. The article is available [here](#).

**6. G. Williamson McDiarmid and Yong Zhao, Time to Rethink: Educating for a Technology-Transformed World, ECNU Review of Education 2023, Vol. 6(2) 189–214.**

Authors present arguments for Ed Tech's potential to achieve unprecedented personalisation in education. Here is the [link](#) to the journal.

**7. Stella Timotheou, Ourania Miliou, et al., Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review, Education, and Information Technologies (2023) 28:6695–6726.**

Refer to this article for a literature review. The authors have synthesised quantitative and qualitative data from numerous meta-analyses and review studies for insights into the impact of ICTs on various stakeholders in the educational sphere. Text is available [here](#).

**8. Gurumurthy Kasinathan & Amshuman Dasarathy, The Edtech Leviathan, 01 January 2022, Economic and Political Weekly, 2022 Vol LVII No 1.**

This comment is on the risks of students in India being reduced to data mines to enable Ed Tech to fine-tune its algorithms. Buzzwords such as “student-centred tech” or “context-based learning” tend to conceal the underlying vested commercial interests. Audrey Watters writes, “‘Re-imagining’ is a verb that education reformers are quite fond of. And ‘re-imagining’ seems too often to mean simply defunding, privatising, union-busting, dismantling, outsourcing”. Hollowing out the public education system is a real risk and takes us away from achieving the educational promise of social transformation. Text is available [here](#).

**9. Eilean von Lautz-Cauzanet, EdTech: Why the project-based approach must change in order to contribute to system resilience, Prospects (2022) 51:573–581.**

This article questions the project methodology in Ed Tech initiatives and solutions. The argument is that the prevailing EdTech design lacks scalability and primarily serves a branding strategy. Despite the staggering investment of human, technical, and financial resources, the adoption of Ed Tech offers limited cost-efficiency and fails to bring about transformative change within the education system. The article recognises the vulnerability of the Ed Tech initiatives due to their reliance on intricate and resource-intensive support networks and the unpredictability of the political and governance landscape. This leads to the conclusion that currently, Ed Tech projects face significant obstacles in becoming integral components of the systemic solutions urgently required for education systems to 'build back better.' Text is available [here](#).

**10. OECD (2021), OECD Digital Education Outlook 2021: Pushing the frontiers with Artificial Intelligence, Blockchain and Robots, OECD Publishing, Paris**

(i) Smart technologies are human-AI hybrid systems. Involving end users in their design, giving control to humans for important decisions, and negotiating their usage with society transparently are critical to making them practical and socially acceptable.

(ii) Smart technologies support humans in many ways without being perfect. Transparency about how accurate they are at measuring, diagnosing, or acting is an essential requirement. However, their limits should be compared to those of human beings performing similar tasks.

(iii) More evidence about practical pedagogical uses of intelligent technologies in and outside the classroom and their benefits for system management purposes should be funded without focusing exclusively on the technology. Criteria for this evidence to be produced quickly could also be developed.

(iii) The adoption of intelligent technologies relies on robust data protection and privacy regulation based on risk assessment and ethical considerations where regulation does not exist. For example, there is mounting concern about the fairness of algorithms, which could be verified through “open algorithms” verified by third parties.

(iv) Smart technologies have a cost, and cost-benefit analysis should guide their adoption, acknowledging that their benefits go beyond financial ones. In many cases, identifying data patterns allows for better policy design and interventions more likely to improve equity or effectiveness. Policymakers should also encourage the development of affordable and sustainable technologies thanks to open standards and interoperability. Accessible [here](#).

**11. The Department for Education (UK), Education Technology (EdTech) Survey 2020-21, Research Report.**

This report discusses the perceptions of the impact of technology on pupil attainment (which were positive) and barriers recognised by Headteachers and teachers in the increased uptake of EdTech. Report available [here](#).

**12. Muñoz-Najar, Alberto; Gilberto, et al 2021. Remote Learning during COVID-19: Lessons from Today, Principles for Tomorrow. Washington, D.C.: World Bank Group.**

[Key Findings](#)

- i. Emerging evidence as to the effectiveness of remote learning during COVID-19 is mixed at best.
- ii. For remote learning to be effective, it requires three complementary, critical components: effective teachers, suitable technology, and engaged learners.
- iii. Governments deployed remote learning in a variety of ways.
- iv. Yet many countries struggled to ensure take-up; some even found themselves in a remote learning paradox.
- v. What once was a digital divide for some is now a digital chasm for many.

#### Recommendations

This report proposes the following principles for reimagining learning:

- i. Adopt suitable technology.
- ii. Prioritise effective teachers.
- iii. Ensure learners are engaged.

Report available [here](#).

### **13. Boston Consulting Group (BCG), in partnership with Schoolnet and Google for Education, Equipping, Enabling, and Advancing Digital Education in India, September 2021.**

This report considers the complexity and heterogeneity of India's education system and recommends:

- i. Addressing key adoption enablers and existing barriers will drive further uptake of digital in education.
- ii. The path forward involves integrating an ecosystem of public, private, and social sector players to enable critical elements within a comprehensive strategic vision.
- iii. Equip and Enable strategies will be driven by a coordinated, experimentation-driven strategic vision for at-scale adoption of digital in education.

Report available [here](#).

### **14. Jake Bryant, Felipe Child et al., New global data reveal education technology's impact on learning, 12 June 2020, McKinsey & Company.**

This report presents five key findings on the status quo of potential links between technology and student outcomes:

- i. The type of device matters - some are associated with worse student outcomes.
- ii. Geography matters - technology is associated with higher student outcomes in the United States than in other regions.
- iii. Who is using the technology matters - technology in the hands of teachers is associated with higher scores than technology in the hands of students.
- iv. Intensity matters - students who use technology intensely or not at all perform better than those with moderate use.
- v. A school system's current performance level matters - technology is associated with worse results in lower-performing school systems.

The article is available [here](#).

### **15. PISA 2025 Learning in the Digital World**

PISA recognises that future jobs will increasingly require people to interact with computational models and simulated realities and to solve problems using digital tools. This involves broad skills and perspectives supporting lifelong learning in novel and unfamiliar digital environments. The PISA 2025 Learning in the Digital World assessment focuses on two competencies that are essential to learning with technologies:

1. *Self-regulated learning* refers to the monitoring and control of one's metacognitive, cognitive, behavioural, motivational, and affective processes while learning and

2. *Computational and scientific inquiry practices refer to the capacity to use digital tools to explore systems, represent ideas, and solve problems with computational logic.*

Discover more [here](#).

**16. Sharples M., Visions for the Future of Educational Technology in Ferguson, R., Jones, A. and Scanlon, E. (eds). Educational Visions: Lessons from 40 years of innovation pp. 151–166, 2019 London: Ubiquity Press.**

This chapter argues that technology alone will not transform education. An analysis of 40 years of research into the impact of educational technology on educational performance shows only a small to moderate effect size of 0.33. The successes come from understanding how to use technology effectively in the classroom and online. Future research must explore good combinations of technology and pedagogy. A deep understanding of the science of learning can make for successful learning environments of the future, which focus on supporting students to set and meet their goals, offer a combination of personalised tuition and social learning, and harness predictive analytics to assist teachers and students while providing a delightful experience. Chapter available [here](#).