

BOOK REVIEW

Reimagining Digital Learning for Sustainable Development: How Upskilling, Data Analytics, and Educational Technologies Close the Skills Gap

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Reimagining digital learning for sustainable development offers a compilation of curated insights from leading experts in the educational sector, as they contemplate how educational systems will have to reinvent themselves to support the achievement of the United Nations' Sustainable Development Goals (SDG) by 2030. The ambitious SDGs pose multi-sectoral challenges requiring massive upskilling and reskilling of the workforce as it faces the challenges of meeting the job requirements of the Fourth Industrial Revolution. As they acknowledge that educational systems must prepare learners for multiple career pathways involving jobs that do not yet exist, the authors posit that resourceful and innovative approaches to educational development will be required for meaningful and powerful transformation of educational institutions that, to this day, are constrained by a system created for the First Industrial Revolution. Lifelong learning is brought to the forefront as a model for developing institutional capacity, on the fringes of formal education.

Building on the 'digital tsunami' brought about by the COVID-19 pandemic that catapulted teaching and learning into the digital sphere worldwide, educational institutions must leverage the creative destruction empowered by emergency remote teaching to deconstruct secular credentialing systems and create flexible and adaptive learning environments. Contributors to the book examined real-world cases and assessed the impact of the pandemic on educational practices as the world adapts to a 'new normal' of educational provision enabled by technology to solve complex development challenges. In some of the chapters, the potential of emergent technologies such as Virtual Reality (VR) and Augmented Reality (AR) grounded on Artificial Intelligence (AI) principles is emphasized as part of the solution to address rapidly growing skill gaps in uncertain and shifting workplaces. However, the authors also acknowledge that agile strategies that will work in scalable and flexible bandwidth environments will be fundamental to enable educational transformation in the Global South.

Woven through the chapters is the notion that sustainable investment in connectivity, infrastructure, human capital and the creation and curation of digital content will be essential to accelerate learning transformation and the accompanying shift in content formats and pedagogic approaches that will reshape educational institutions.



The book is organised into eight themes, each including distinct but complementary chapters. The first theme, *Learning in the 21st century*, examines the scale of the educational challenge brought about by the demands of the Fourth Industrial Revolution in terms of the massive skilling that will be required to respond to sustained economic development. The rich discussion in the four chapters contained in this theme explores capacity development as critical to achieving the SDGs through a cross-sectoral, multi-layered approach anchored on flexible and adaptive lifelong learning technology-based approaches and the deconstruction of the traditional degree, supported by complementary, modular, micro-credentialling systems. The discussion examines the crucial role of technology in enhancing scalability at affordable rates to mitigate the stark inequalities in digital access and the lack of digital skills among teachers uncovered by the pandemic, especially in developing economies; and it underlines how ‘unlearning’ of conventional behaviours will be instrumental in the introduction of new educational models focused on changing teaching and learning paradigms.

The second theme, *Innovative pedagogies to advance reach, relevance and quality learning outcomes*, focuses the discussion on issues of quality around teaching and learning enabled by technology. Chapter 5 starts the theme with an interview with Tony Bates, who introduces the idea of blended learning as the future of teaching, especially as a consequence of the COVID-19 pandemic, while Chapter 6 brings in the context of the South Pacific region, reiterating how conventional approaches to teaching and learning are failing to address educational challenges in developing regions: new pedagogic models enabled by technology are needed, however, a plan for affordable digital technologies will be imperative for success. The last two chapters in this theme take a deeper look at how standards that define quality need to be adapted to reflect new educational design paradigms enabled by technology to support learner-centric approaches and decentralised credentialling models. The University of Edinburgh *Manifesto for teaching online* described in Chapter 8 goes further to suggest that a divergence from conventional best practices towards contextual, socially-embedded approaches in digital education will be key to educational transformation and quality learning outcomes.

In theme 3, *New models for deeper learning*, the authors propose alternative methodologies such as Massive Open Online Courses (MOOC), gamification and immersive simulations and VR as paving the way to achieve the SDGs. Chapter 9 highlights the success of MOOCs in specific developing contexts as this type of delivery can address local teacher shortages. However, the issue of local contextualization for relevance of teaching remains to be addressed. Chapters 10 and 11 on game mechanics and immersive learning introduce the concepts of badges and advocate for gamification strategies in learning design to nurture learner agency in capacity development systems that can be adapted and managed by learning communities as opposed to institutions. The discussion framed around the effectiveness of gaming as a learner-centric approach to design highlights the hindrance of the high cost of game development. It is made abundantly clear that a funding and cost recovery model is required over multiple years, especially as it concerns developing countries.

Theme 4, *Digital and blended learning in action: Good practices and cases*, presents specific cases from different parts of the world where capacity development for the public sector has been successfully implemented using digital and blended models. Tec de Monterrey in Mexico has seen tremendous success in the implementation of a massive learning programme that linked learning to jobs in the public sector through distance learning supported by communities of practice. Flexible models were

designed to make education accessible in remote areas through local learning centres. In Malaysia, a structured, systematic approach supported by governmental institutions and strategic partnerships led to the successful implementation of a capacity development initiative to upskill the workforce in the public sector. In Latin America and the Caribbean, livelihoods were improved through the continuous upskilling of workers in the public sector as a result of the establishment of an e-learning ecosystem that promotes lifelong learning, supported by stackable digital credentials. China has used its 5G infrastructure as well as AI and gamification approaches to support lifelong learning, reskilling workers and addressing the need for continuous capacity development. India has focused on Vocational Education and Training (VET) to provide alternative lifelong learning opportunities to enhance employability for its growing youth work force. Public/private partnerships as well as the institutionalisation of national standards have enabled the delivery of relevant training through digital portals and created pathways for students.

Chapter 17, in theme 5, the *Future of content development: Leveraging open resources*, addresses the integration of Open Educational Resources (OER) to mediate access to quality resources for teaching and learning. OER foster lifelong learning and can be integral to providing equitable quality learning opportunities to support the achievement of SDG 4: Quality Education, especially if framed by national and institutional policy.

In theme 6, *The power of the platform*, the discussion is centred on how educational technology (Ed Tech) can offer possibilities for changing educational paradigms, facilitated by Learning Management Systems (LMS) such as Moodle, underpinned by Open Educational Practices (OEP) and backed by socio-constructivist and constructionist approaches to teaching and learning. LMS designed for low-bandwidth environments will be fundamental in the implementation of flexible personalised learning environments. Furthermore, while Ed Tech infrastructure, such as 5G networks, blockchain applications to facilitate and validate credentialing systems and teaching and learning applications supported by AI, will improve levels of personalisation, they are capital-intensive technologies that will require sustained funding, better attained through strategic cooperation and partnerships. At the simplest level, virtual tutors and chatbots powered by AI allow for scalability of learner-centric design and Socratic delivery methods impossible to deliver otherwise in mass education settings. However, the development costs for these technologies must be taken under serious consideration.

As theme 7, *Modernizing learning measurement, evaluation and credentialing through data analytics for insights and decision making*, delves into the world of predictive analysis, the discussion in the chapters advocates for the benefits of data-driven decision-making for continuous improvement, especially when framed by carefully designed Monitoring and Evaluation (M&E) systems. However, ethical issues about the gathering of student data come to the surface, as those data can be used to make decisions about students, such as acceptance into programmes, or can easily prejudice administrators' or professors' impressions of their students' interests and abilities. In Chapter 23, the author speaks to the importance of protecting faculty and students' rights to privacy and encourages institutions to scrutinize the kind of data they need to collect in the function of how that data will benefit instructors and learners or how it will affect the improvement of teaching and learning. Theme 7 closes with an analysis of open badges, as compared to traditional credentialing systems, and, in the realm of data

analytics, it discusses the types of data that can be incorporated into a single badge. Although badging systems aim to provide a richer image of a graduate profile, which cannot be done with conventional (flat) credentials, the criteria for the badge and the types of information it will contain, need to be carefully determined with a focus on promoting learner mobility and interoperability across educational institutions.

The last theme in the book, *Mobilizing partnerships to support pathways to work*, puts forward partnership models focused on relationship building with key stakeholders that will be integral to thriving educational ecosystems. Partnerships are hailed as key to bringing down silos and to meeting educational goals, underpinned by common value sets and shared collaboration. In moving from a conceptual framework to action, Chapter 26 highlights how the democratization of digital tools can be accelerated due to the 'Open' movement, making learning resources more accessible to all. As a stark reminder, the author doesn't lose sight of how, during the pandemic, inequitable access to the Internet negatively impacted livelihoods of individuals already disadvantaged as they were denied access to schooling.

In summary, this book provides practical and useful insights on the state of educational provision in a post-pandemic world, putting forward alternatives for how and where to invest in education and capacity development to meet the SDGs. Digital learning needs agility, as the speed of change is faster than institutional response. Innovative partnerships are necessary to support educational transformation and will be vital for success, more so in developing countries. The growing youth population can be galvanized to catapult change forward, but that change will need a roadmap backed by sound national and institutional policy that is visionary and futuristic.

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