

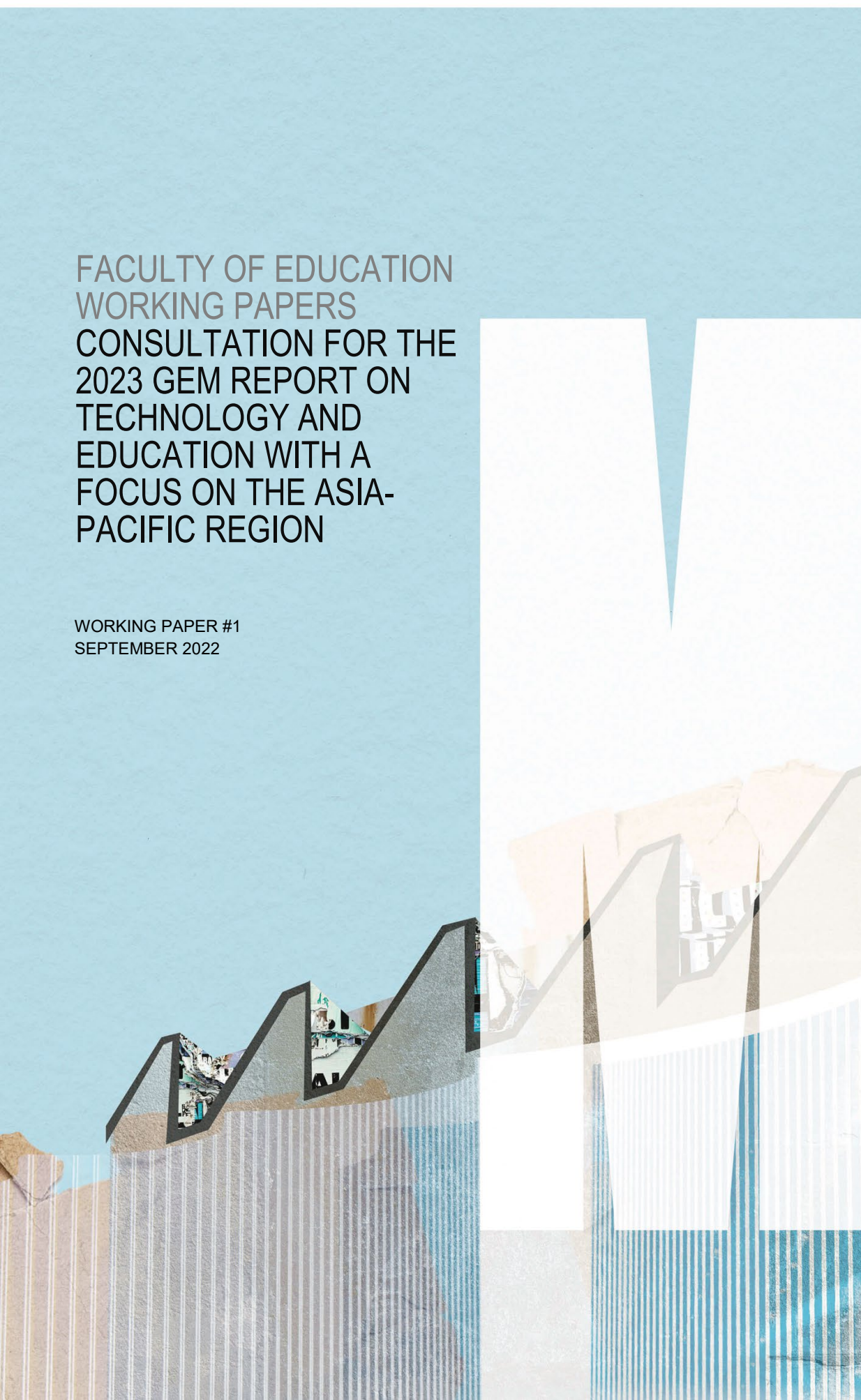


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Global Education
Monitoring Report

FACULTY OF EDUCATION
WORKING PAPERS
CONSULTATION FOR THE
2023 GEM REPORT ON
TECHNOLOGY AND
EDUCATION WITH A
FOCUS ON THE ASIA-
PACIFIC REGION

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ABOUT US

Monash Education is one of the world's leading education faculties, with an international reputation for excellence in research and teaching. We are committed to researching, communicating and applying knowledge about teaching and learning in ways that foster quality in education.

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SECTION ONE

The 2023 Global Education Monitoring Report on technology and education

The Global Education Monitoring (GEM) Report is an editorially independent annual report hosted by UNESCO that, since 2002, ‘holds the global community to account for the commitments they made to education progress’. The process of writing a GEM Report begins with a think piece on the theme of the report, commissioned from a leading international expert. The think piece then informs the development of a concept note which paves the way for national and regional consultations with additional experts. During this phase, a landscape analysis and an evidence review are commissioned, accompanied by a series of background papers from academics, universities and organisations from around the world.

The 2023 GEM Report will focus on the role of technology in education, examining the extent to which technology can help towards UNESCO's Sustainable Development Goal for education (SDG4): to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

The GEM Report concept note on technology and education—the output examined here—lays out a number of areas of interest. These include a distinct interest in exploring the education problems that technology might be most suited to address. For example, the concept note highlights issues of access, equity and inclusion, using technology to support the development of basic skills, how technology might play a part in supporting system management, and how education systems might play a role in supporting technology development.

These are all complex issues, and the GEM Report team acknowledges the need for careful discussion and dialogue with the full range of different stakeholder groups involved in the area of technology and education. The 2023 GEM Report concept note proposes the following questions as a starting point.

- *What do we know about the role of technology in addressing each of the education challenges identified with regard 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?*

In preparation for the 2023 report, the GEM Report team is engaging expert groups from around the world to respond to these questions, and to provide context to the report. The GEM Report team recognises the need to explore the issues, tensions and barriers that might confront future technology efforts in education, and seeks to identify the shifts in thinking needed to understand how technology can support educational change. Underpinning these specific points of interest in the GEM Report concept note is the key question: *What conditions need to be met for technology to support education?*

Background to the Monash virtual consultation (June 2022)

This working paper details the outcomes of an online panel discussion held for the 2023 GEM Report on 1st June 2022, hosted by Monash Education's Digital Education Research Group. It was one of a series of consultations held around the world throughout 2021 and 2022 that brought together stakeholders from academia, industry, education systems, and government.

This paper outlines the recurring themes, issues and points of contention that emerged over the 90-minute discussion, all of which will be directly relevant to the 2023 GEM Report. The participants have been given the opportunity to review and edit their contributions to this final report.

SECTION TWO

Technology and education: emerging points of discussion

The need for contextual nuance: one size does not fit all

Any discussion of technology and education needs to avoid generalisations about education and be as specific as possible regarding the forms and type of technology use being talked about. Pre-school, elementary and secondary schooling are all very distinct sectors of education, each engaged in very different forms of teaching and learning, catering for distinct age groups of children and young people. Similarly, tertiary colleges, universities and work-based training are very different contexts within which technologies can be used. Therefore, when discussing technology and education, we need to pay attention to the specific attributes and needs of these different forms of schooling, and remain mindful of the distinct forms of technology use that might be suitable in each of these contexts.

Most of the discussions around the potential of emerging technologies to change education derive from experiences in higher education involving undergraduate students. For example, the current enthusiasm around learning analytics relates specifically to adult university students capable of self-regulating their own study pathways. Many of these assumptions do not easily translate to compulsory schooling.

We need to move on from generalised discussions of education, and consider each of these settings separately. Most importantly, we need to avoid offering one-size-fits-all explanations. Technology use in education is highly context-specific, and not easily scaled-up across schools, sectors and systems. We need to be wary of talking about best practice without acknowledging the specific contexts and circumstances within which instances of digital technology use appear to work.

Many technologies being used in education are ‘institutional’

Contemporary education now maps onto different forms of technology, many of which are not directly used by teachers or students. Traditional understandings of technology in education view it as a tool that is used by students, teachers and other individuals. This has led to a focus on developing user skills, competencies and understandings, and on reducing barriers to individual uses of technology. However, many of the most significant modern educational technologies are better described as institutional infrastructure. These are systems, platforms and software that operate in the background to student and teacher activities and are designed to fulfil institutional functions, such as services enabling the efficient administration and delivery of curricula, or performing monitoring and tracking functions.

These different forms of background technology include various genres of education technology that are currently raising concerns, such as online exam proctoring, performance

analytics, anti-plagiarism software, and other forms of remote monitoring and decision-making which have limited visibility and accountability. This emphasises the importance of distinguishing between individually-facing technologies that are ‘done by’ students and teachers, and institutionally-facing technologies that are ‘done to’ students and teachers.

Many technologies being used by students and teachers are unofficial

“ *How students use technology is often different from how instructors/lecturers imagine that they are using it. [Sarah Prestridge]*

Close attention needs to be paid to the various technologies being used by students and teachers outside of those provided by their schools, universities or places of work. There is growing evidence of students developing ad hoc learning networks on popular social media platforms and discussion forums—either with classmates or with remote online contacts. Similarly, students enrolled in university courses might also be engaged in MOOCs and other supplementary online tuition from other sources.

The scale of these forms of education technology should not be underestimated. Wikipedia and YouTube are widely-used to support informal learning and self-study, alongside fast-growing educational content on platforms such as TikTok and Instagram. At the same time, there has been rapid growth of online services and software that support students in completing coursework and assessments, from AI-driven paraphrasing tools that can generate written text, to plagiarism avoidance software and online coursework sharing platforms. Many of these uses of technology continue to take place ‘under the radar’ of educational institutions and education technologists. Future discussions of how students might make better uses of technology need to consider these additional informal ‘off-system’ and ‘second screen’ forms of education technology.

“ *Students are acquiring all sorts of knowledge through informal technology experiences—these can supplement formal learning. However, these informal technologies uses do not have to be made formal . . . we always learn through our informal experiences. [Hitendra Pillay]*

The importance of technology procurement

While most discussions of education technology tend to focus on the use of already acquired hardware, software and systems, more attention needs to be paid to the procurement of new technology. Indeed, technology procurement is an obvious, but easily overlooked, factor in determining the nature and form of technology use that takes place in education.

At present, responsibility for procurement of new technologies within schools, universities and other education institutions is often devolved to managers or technical staff, and driven by

budgetary, logistical and administrative priorities. Moreover, technology procurement in many sectors is increasingly restricted by the monopolistic business practices of ‘big tech’ actors. Technologies and services from the likes of Google, Microsoft and similar providers benefit from the network effects of having majority use. These companies have often negotiated binding contracts with schools, universities and administrators, making it difficult for educational institutions to adopt other technologies.

There needs to be more discussion around how to encourage democratic forms of technology procurement within education that draws on the preferences, needs and concerns of the groups that will be most impacted. Any proposals need to consider how to achieve buy-in from students, teachers and other stakeholders who might not have sufficient technical expertise or personal interest in technology.

The benefits of distributed leadership around technology use in education

Technology use in schools and universities falters when it is too rigidly directed by leaders and managers. Conversely, more laissez faire approaches, where students and staff are permitted to make any use of technology, can result in unequal and inefficient practices.

There is growing recognition that the use of technology within education institutions benefits from forms of distributed leadership, that is, processes where strategic decisions are made by involving stakeholders in continuous dialogue, which in turn leads to negotiated understandings of needs and priorities.

On the one hand, strategic decisions are still needed when procuring or upgrading user-oriented educational technologies. Issues to consider here include the need to balance increased demand for learner-centred personalised technologies with technologies that support teacher-centred learning, as well as the need to evaluate and scrutinise the pedagogic strengths and weaknesses of different systems. These are often decisions that can be led by teachers and students.

“ *Perhaps we need to think about permissive approaches to allowing different uses of technology to flourish and not locking down and tightening what technologies are official . . . I think this is a nice challenge for us all. Do we need to control the learning environments in order to stimulate quality [and] achieve inclusive and equitable conditions?*
[Michael Henderson]

On the other hand, distributed leadership increasingly means working alongside administrators interested in large management systems which can interoperate with multiple databases to produce diagnostic or predictive analytics. In this case, strategic decisions need to consider the broader digital infrastructures within an organisation, or even across an entire education system, as data-based technologies must operate at scale and across multiple institutions to be effective. These infrastructure-level conversations will involve multiple political stakeholders and commercial entities, and their ramifications can be wide-ranging.

Rethinking professional learning and other forms of teacher development

“ *Part of the problem is that we are focusing on educational technology rather than purposes and pedagogy (with technology coming in where relevant)—what Fiona Aubrey-Smith would describe as a shift in focus from educational technology to pedagogical technology, ‘from edtech to pedtech’. [Peter Twining]*

Professional development is traditionally considered a key lever to enable technological integration, but too much emphasis continues to be placed on supporting teachers to ‘use’ technology, rather than enhancing teachers’ understandings of pedagogical innovation and effectiveness.

The educational research literature has long asserted the importance of approaching technology use in terms of pedagogical, rather than technological, priorities. This has been described as a shift ‘from edtech to pedtech’ (pedagogical technology), and is illustrated in developments such as Patricia Murphy’s Innovative Pedagogy Framework and Jane Hunter’s High Possibility Classrooms.

Developing a teacher focus on pedagogy and technology is especially relevant to data-driven learning systems which can be narrowly based around behaviourist and palliative pedagogies, that is, addressing the symptoms of educational disengagement rather than acting in a more constructive way on the root causes. Another necessary shift is to encourage a more political approach to professional development, where teachers are encouraged to challenge and contest the implicit pedagogies of digital systems.

“ *The most important question for teachers to think about in terms of technology is that it is how you use it that matters, not the tech itself. . . but fundamentally teaching how to learn with it. [Sarah Prestridge]*

Acknowledging the impact of technology on teachers’ work

The growing presence of digital technologies in education also needs to be seen in light of the ways that technology now forms an integral element of teachers’ work and workload.

In contrast to the presumption that digital technologies largely support and assist teachers’ work, teachers are increasingly finding that technology exacerbates structural issues (workload and attrition) and the problematic lived experiences (burnout, dissatisfaction), which are undermining the teaching profession globally. Teachers are having to work with software, systems and platforms that extend their work into non-school spaces and non-working times. Some technologies are associated with an intensification of work, for example, increased reporting, duplication of paperwork, and additional communications. Teachers are also concerned about how technologies can become implicated in the increased monitoring and assessing of their work and performance.

Such issues need to be considered when discussing the potential benefits of increased technology use in the classroom.

Continuing access and skills gaps

Although digital divides appear to have narrowed in many global North countries over the past two decades, significant proportions of households continue to face challenging circumstances. Access to technology, and having the skills and competencies to benefit from this access, will continue to vary along major lines of disadvantage, such as social class, race and ethnicity, and geography.

Equitable access to technology remains a priority, not just in middle-income and low-income countries, but also in high-income regions where there are persistent pockets of disadvantage. These enduring social and digital inequalities are likely to continue into the latest wave of upskilling related to emerging forms of AI, algorithmic and automated technologies. In many countries in the Australasian and South-East Asian regions, there is a growing awareness of how these recurring disadvantages are rooted in historical conditions of colonialism.

These challenges can be addressed by education institutions and school systems. For example, as we approach a Fourth Industrial Revolution, where automation and various forms of AI-enabled processes will feature prominently, education systems around the world are trying to update curricula and develop frameworks to enhance new competencies across whole populations.

Research on digital literacies (including work carried by UNESCO [Shin et al 2019]), suggests that the development of such competencies relies on people's informal and digitally-mediated social networks. Policies are also required that focus on developing technology-related support and advice within informal local and community settings, such as libraries, temples, churches and other community groups.

The need to develop critical understandings and awareness of digital technologies

Discussions of digital skills and digital literacies have traditionally focused on issues of technical proficiency and the need to develop employment-related skills. However, there is growing acknowledgement that the development of digital skills among children, young people and adult populations needs to be expanded to include critical awareness of the pitfalls of technology use. Indeed, such awareness is enshrined in Target 4.7 of SDG4, which explicitly states that students should engage with digital technology in ways that support their understanding of 'human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity.'

“ *In present models of digital citizenship, aspects such as the way people interact online—being ethical and empathic—are somewhat hidden, and none of the elements explicitly address notions of digital activism, which I think is increasingly important. [Cheryl Brown]* ”

Critical digital literacies also need to address the environmentally harmful consequences of increased technology use in the near future, including an increased reliance on resource-intensive computational processes such as AI and cryptofinance. Such understandings might be best framed as a form of critical digital, media and information literacies that look beyond a notion of functional literacies and towards critical and sociocultural multi-literacies. This approach highlights issues such as the critical understanding and evaluation of digital information as well as safety issues in a datafied, AI-driven society (see Miao & Holmes 2021 report for UNESCO).

These forms of critical literacies also need to acknowledge the wide-ranging, and often resistant, ways young people engage with digital technology. One growing area of importance is online political engagement, digital activism and online political dissent. This suggests developing frameworks that extend beyond existing models of digital citizenship (such as DigComp, which has been adopted in the GEM Report).

Challenging commercially-led models of education technology

Discussions of future forms of education and technology need to take account of the commercially-led and market-driven nature of mainstream EdTech development and production. This is particularly relevant in the wake of the pandemic shutdowns of schools and universities in 2020 and 2021. Global investments in EdTech initial public offerings trebled in 2021 compared to previous years. There is now growing industry interest in promoting hybrid (digital and traditional) educational provision outside of the formal structures of schooling: home schooling, tutoring for selective secondary or tertiary admissions and direct-to-consumer education technologies.

“ *We have reached the point where multi-billion-dollar publicly traded academic cheating companies are now worth several times as much as plagiarism detection companies like Turnitin. [Philip Dawson]*

The speed of these developments can be seen as evidence of a vibrant market, but it also raises important questions about likely tensions between the business logics of technology companies and the public values of many education sectors. For example, many areas of the IT industry promote values that are focused on economic outcomes, such as scaling-up, modular provision, the idea of ‘education-as-a-service’, and rentierism, where semi-automated and black-boxed proprietary services can be accessed only through subscription services. This can lead to monopolistic or even predatory practices. We are moving towards scenarios in some specific areas of education where different segments of the EdTech sector are entangled in problematic relations of mutual dependence. For example, the online assessment integrity market is seeing the growth of digital anti-cheating companies becoming overshadowed by the rise of ‘contract cheating’ and other forms of malpractice online services, which often operate in grey or non-existent regulatory conditions.

Developing forms of proactive governance and regulation

The increased influence of commercial imperatives on the nature and form of education technology raises the need for enhanced forms of governance and regulation from state and civil society actors. In countries with stable democratic governments, there is now a need for increased active state involvement to ensure technology production and marketing to education customers is aligned with values of public education and the underpinning goals of equity, access, inclusion, and quality.

Forms of governance should nurture non-mainstream and small-scale technological approaches that are sensitive to local needs and create favourable conditions for ethical grassroots EdTech entrepreneurship.

Given the growing importance of digital technology in teachers' work, unions and other labour organisations and professional bodies should become more involved as key stakeholders in governance and regulation matters.

SECTION THREE

Future challenges and ways forward

As the 2023 GEM Report team continues its consultation on technology and education, we offer the following concluding points for consideration.

1. Co-design / collaborative design

Panellists and workshop participants agreed that many of the issues and concerns discussed above align with principles of co-design and collaborative design. Such principles might be used to develop institutional policies around technology use, to inform practices such as technology procurement, deployment and disposal, and in the design, development and production of new technologies. It was noted that some education institutions in the region are already using deliberative democracy approaches to design institutional statements of EdTech ethics. These principles are particularly appropriate to culturally diverse and/or culturally fractious contexts. Collaborative co-design processes can also include a wide-range of learners with first-hand experience of the diverse contexts in which the technologies might be used.

That said, co-design principles are not easily enacted in educational settings. Care needs to be taken so that people feel empowered when involved in collaborative design, and have a genuine motivation to be involved. This requires moving the culture of education institutions, teachers and student groups beyond compliance and toward one of critical and creative engagement.

There is value in aligning education technology with long-standing movements in the field of disability justice around inclusive and respectful design, as well as emerging principles of 'design justice'. These approaches see new technology development as being based around the needs and perspectives of marginalised groups.

“ If we co-design a future which meets the needs of our first nations people then we can be more inclusive, equitable and relevant in our practice . . . If we don't foreground our cultural responsibilities we will continue to make decisions within our existing colonial mindsets. [Cheryl Brown]

2. Anticipating future times of EdTech scarcity?

Panellists and participants agreed that the environmental consequences of technology can no longer be ignored. As was noted in the main panel discussion, all digital technologies require mineral extraction and manufacturing processes that exploit and harm natural resources and human labour.

“ The material conditions of EdTech are really important—labour conditions, environmental sustainability. We sometimes forget there is a real material world behind our digital universe. [Mark Pegrum]

Education should join other sectors of society in rethinking digital technology for an age of scarcity, and ask difficult questions about whether the modern technological paradigm can sustain liveable conditions on the planet in the medium to long term.

“ *How do we rethink technology in an age of scarcity? When considering technology in education we need to consider the material conditions, social relations, digital and non-digital aspects of the technology and questions of ethics and purpose. [Rachel Buchanan]*

3. Toward more nuanced discussions around technology and education

Discussions around technology and education would benefit from a basic change in tone.

Debates about teachers and students can be polarised. On one side is a position that assigns unwarranted agency and ‘freedom to choose’ to educators and learners. On the other is a position that sees teachers and students as passive users or, worse, victims of technological oppression. These extremes divert attention from the actual social and digital divides that hold back our educational systems.

However, we need to avoid promoting broad recommendations and solutions that are assumed to apply to all possible contexts. Debates around technology and education are better served by focusing on key principles and values that can create productive conditions for dialogue between different stakeholders, and which are respectful of the contextual nuances of contemporary education systems.

We need to move beyond discussions of education technology that try to identify ‘best practice’ and ‘what works’. Discussions should focus on identifying common problems, rather than on supposed solutions. Instead, we need to foreground the notion of ‘good’ rather than best practice, or perhaps simply ‘interesting practice’. Disseminating examples of good uses of educational technology sourced from early adopters and leading-edge practitioners may lead to helpful templates that others can use, provided they contextualise and problematise them. In this sense, a good practice may turn into an interesting one by de-emphasising the glossy and curated aspects and highlighting instead the compromised, contextual but real (and replicable) pedagogical implications. The discussion about what constitutes a helpful, interesting or ‘best’ practice certainly needs to continue, as consensus has not been reached. Nonetheless, a change in tone in such discussion seems warranted, in order to convey that any successful uses of technology are likely to be locally contingent on a range of different circumstances. Teachers can be encouraged to form local communities of knowledge-sharing, and develop forms of local knowledge around such practices.

“ *Perhaps we need to simply focus on interesting practice, because good practice is problematic (what is good in context X may be terrible in context Y). [Peter Twining]*

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