EdTech

Commercialisation and privatisation in/of education in the context of Covid-19

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Summary

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The Covid-19 emergency has affected education systems worldwide. The 'pivot' to 'online learning' and 'emergency remote teaching' has positioned educational technology (edtech) as an integral component of education globally, bringing private sector and commercial organisations into the centre of essential educational services. The effects are likely to persist for some time, first of all in temporary 'blended' models of 'socially distanced' schooling during the period of pandemic recovery, and perhaps for longer in 'hybrid' approaches in which edtech is embedded in curriculum, pedagogy, assessment, and school management. This report explores how privatisation and commercialisation of education have advanced during the 2020 pandemic, with a particular focus on edtech. It maps out the activities of a range of organisations, considering their consequences for the future of education beyond the crisis, and identifying key issues, research priorities and recommendations to be considered as education systems begin the process of recovery. The summary findings include:

- **Global edtech industry solutionism.** A 'global education industry' of private and commercial organisations has played a significant role in educational provision during the Covid-19 crisis, working at local, national and international scales to insert edtech into educational systems and practices. It has often set the agenda, offered technical solutions for government departments of education to follow, and is actively pursuing long-term reforms whereby private technology companies would be embedded in public education systems during the recovery from the Covid-19 crisis and beyond it in new models of 'hybrid' teaching and learning. During the pandemic, this instantiation of the global education industry produced and circulated powerful ideas about Covid-19 as a novel 'opportunity' to 'reimagine' education, treated home-based learning as a 'microcosm' of a digital future for blended forms of education, and encouraged 'experimentation' and 'innovation' to shape education systems for the future. It established the crisis as a catalytic opportunity for educational transformation.

- **Covid coalitions and public-private policy partnerships.** The role of commercial providers has been supported, promoted

and advanced by a range of organisations that cut across public, private and third sectors. Some of the most influential promoters of edtech solutions during the pandemic include international multilateral organisations such as the World Bank, OECD and UNESCO, in many cases operating in global multisector coalitions to promote 'best practices' for policymaking centres to emulate. Commercial edtech providers and advocacy organisations have also formed powerful networks and coalitions to highlight and promote edtech products for use by schools, teachers and parents. These coalitions illustrate the emergence of new kinds of multisector public-private partnerships and policy networks in relation to edtech expansion, and the enhanced role of the private sector in educational delivery and governance.

- **Pandemic philanthropy 'reimagining' education.** Financial support and political advocacy for edtech solutions to school closures during the pandemic have been provided by technology philanthropies such as the Gates Foundation and the Chan Zuckerberg Initiative. They have dedicated new multimillion dollar funds to a range of edtech programs and sought to consolidate the long-term role of the private sector and commercial technology in public education. Wealthy individual tech philanthropists have also been given positions of authority as experts in 'reimagining' education for the future, in ways which reflect their pre-existing visions, their financial support for technology-centred models of schooling, and their efforts to influence policy agendas.

- **Edtech market-making.** Financial organisations, market intelligence agencies, venture capital, and impact investors have sought to capitalise on the pandemic. With edtech investment already at high levels, especially in the US and southeast Asia, market predictions have been made to stimulate capital markets, with the Covid-19 treated as a catalytic opportunity to capitalise on the sudden rise in use of technologies in education. Financial models including venture capital, private equity, impact investing and social bonds have all been utilised to fund educational technologies during the pandemic. Market projections of the value of digital learning technologies over the coming decade are likely to attract further investors seeking profit from new disruptive models of public education.

- **Private re-infrastructuring of public education.** Major multinational technology corporations including Google, Microsoft and Amazon have experienced a huge surge in demand for their

products and services due to their capacity to deliver solutions at international scale, at speed, and for free. Supported by multilateral policy influencing organisations and national government departments, these companies have integrated schools, teachers and students into their global cloud systems and online education platforms, raising the prospect of long-term dependencies of public education institutions on private technology infrastructures. Social media platforms including YouTube and TikTok have also sought to grow their presence in education through content creation partnerships for students learning at home, thereby increasing their revenue through attracting advertisers and turning education into a vehicle for the commercial advertising industry.

- **Edu-business expansion.** Educational companies of various types—from global edu-businesses like Pearson to new startups— have rapidly marketed and promoted their products for use by schools, often for free or heavily subsidised for a temporary period. Online schooling platforms are promoted by many education companies as long-term alternative models for education. 'AI' technologies have also experienced significant growth, especially in China, owing to their capacity to provide 'personalised' education in the absence of teachers, and student surveillance technologies have been adopted to monitor students' virtual attendance, assess social-emotional learning and well-being, and enable schools to fulfil their safeguarding responsibilities. These developments will extend the reach of edu-businesses to new areas of schooling, and heighten their long-term influence in classrooms.

Introduction

Natural disasters, wars, economic crises, and now, pandemics – and their aftermaths – are characterised by 'disaster capitalism' (Klein, 2007). As Klein (2007) describes, in the 'shock' of dealing with crisis, the private sector often steps up with calculated, free market 'solutions' to seemingly insurmountable public 'problems'. Yet, Klein also warns, these solutions often exploit and exacerbate existing inequalities, and are fundamentally underpinned by private sector interests of profit making and shareholder value maximisation. Recently, Klein has argued that the Covid-19 pandemic has caused significant global shock and a worst-case scenario that combines health, economic, social and political crises in one.[1] Covid-19 has crippled the global economy, with many nations on the verge of recession. The human cost is immeasurable, not only for the heartbreaking loss of life, but the physical, emotional and financial hardships that billions of individuals now face.

Young people are not immune from the effects of Covid-19. Following initial school and university closures in southeast Asia in February 2020, by April approximately 1.6 billion students were affected in almost 200 countries (90% of the global student population).[2] Endeavouring to facilitate the continuity of learning, schools and teachers have rapidly adopted online learning. To help them do this, commercial educational technology (edtech) players have sprung up as 'emergency respondents' offering free, or heavily subsidised, access to a vast array of products and services. We want to be clear from the outset that there is a lot to be thankful for in this commercial response to the crisis, to recognise that even before the pandemic many public education systems were fraught with problems, and acknowledge that commercial edtech has a long and uneven history in education systems. However, as Klein prompts us, we need to think critically about how this response might shape schooling for years to come. Our intention is to do so without taking a nostalgic view of pre-pandemic public education or a dystopic view of its commercialised future.

The aim of this research is to map the powerful networks of commercial edtech players and coalitions that are coming together to define how education systems should respond to the Covid-19 pandemic. We adopt a deliberately broad conception of edtech that includes

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1   Solis, M. (2020, March 16). Coronavirus is the perfect disaster for 'disaster capitalism'. Vice.
     https://www.vice.com/en_au/article/5dmqyk/naomi-klein-interview-on-coronavirus-and-disaster-capitalism-shock-doctrine
2   UNESCO (2020). Education: from disruption to recovery. UNESCO.
     https://en.unesco.org/covid19/educationresponse

specific digital programs, apps and platforms, but also encompasses some large-scale digital infrastructures, platforms and data systems produced by technology companies and widely used by schools, as well as technologies such as television and radio. Rather than referring to a specific bounded 'edtech industry' of organisations and companies, we also develop a more expansive account of a whole range of organisational types that are, in various ways, involved in developing, promoting, funding, evaluating, and selling or giving technologies for use in schools – including education businesses and startups, government departments, research and development labs, evidence centres, university research departments, technology corporations, multilateral agencies, philanthropies, investors and other sources of funding and finance. Similar to other fields of scientific or technical innovation and development, we understand edtech to be a multifaceted field of technologies, activities and organisations that is embedded in a range of social, geo-political and economic contexts and that affects a very wide range of processes and practices.

The research documented in this report was conducted through detailed and meticulous internet searches, and through following the activities of various organisations during April, May and June 2020, as reported on their websites, on social media, and in the press. We started by cataloguing individual organisations offering products or services to support the use of educational technologies during the crisis, and identified a number of key categories that described these activities. The organisations and activities ranged from individual vendors offering temporary free access to specific products, to multinational, cross-sector coalitions and networks involving government departments, multilateral agencies, private sector companies, and other types of intermediary organisations.

In the key mapping exercise, we aimed to provide a broad cartographical rendering of the emerging landscape of commercialisation, privatisation and education technology during the pandemic, noting its key features, connections, and likely implications for processes and practices of schooling in the short and long term. We highlighted organisations and relationships that exemplified the key categories and conducted more detailed searches of their websites, press coverage and social media presence in order to develop the series of key case studies contained in this report. Informed by previous research, we also sought to analyze and interpret the range of activities documented in the mapping exercise, resulting in identification of a series of key issues, research priorities and recommendations for education unions.

The research was necessarily constricted to English language sources and materials, with the focus primarily on OECD countries (although

we have identified some examples of activity in Africa, Asia and Latin America), and concentrates on the K-12 schools sector, though many of the same dynamics are occurring in Higher Education.[3] Our attention is mainly on the activities of large, powerful and influential organisations and their interrelationships. These organisations and networks, many working beyond and across national borders as well as crisscrossing the public and private sectors, exemplify how educational technology has moved from a relatively enclosed area of product development, policy interest, and educational practice to a full-blown global industry, international policy priority, and a transnational source of influence on teaching, learning and schooling. The evolution of edtech has taken place over a prolonged temporal period, but many of the issues confronted by research in the past have now been compressed and given extra urgency in the context of Covid-19. In the report, then, we document how various organisations and emerging networks across sectors and national borders are both seeking to solve the global disruption of education in the immediate short term, and paving the way for longer-term transformations to education systems, institutions and practices. Like others, we wonder what might happen after the crisis ends. Will schools stop using the edtech services they adopted? Or, are these part of the 'new normal' once face-to-face schooling returns? What are likely to be the long-term changes to public education? While we cannot fully answer these questions, we can map the commercial response to Covid-19, consider the potential consequences, and help inform future responses.

In what follows we first provide a brief review of the literature to highlight the positioning of education within the political economy, and the rapid growth of this in the market making of crisis capitalism. We focus on issues of policy and practice and also outline the concerns of previous research focusing on edtech. In the second and substantive section, we broadly map the commercial platforms and products being widely used in the pandemic, as well as the players and coalitions coming together in response to the crisis, illustrated by a selective series of case studies documenting emergent issues that relate to concerns discussed in the literature review. Third, we provide a synthesis of the main themes and potential concerns that emerge across these case studies about the extent to which privatisation and commercialisation are being promoted as a response to the Covid-19 pandemic, and identify a series of urgent research priorities and recommendations for education unions.

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3   Williamson, B. (2020, May 6). Datafication and automation in higher education during and after the Covid-19 crisis. Code acts in education. https://codeactsineducation.wordpress.com/2020/05/06/datafication-automation-he-covid19-crisis/

I. Review of relevant literature

1. The Global Education Industry

The emergence of the Global Education Industry (GEI) represents the growth of the market into various aspects of public service delivery (Verger, Lubienski & Steiner-Khamsi, 2016). Education has seen the rapid growth of quasi-markets over recent decades, particularly in reference to assessment services, teaching and learning resources, professional development, administration support and edtech (Burch, 2009). As Verger and colleagues observe, the GEI is dynamic and ever shifting, and has the potential to rapidly configure new markets in response to particular contexts. This market making happens beyond national boundaries, is largely driven by non-government organisations, commercial enterprises and philanthropists, and often happens in response to government calls for increased efficiency in public policy (Verger, Fontdevila & Zancajo, 2016). Ball (2012) argues that the expanding influence of the private sector is an effect of the increasing 'business opportunities' that have been created within government by 'new forms of outsourcing, contracting and public–private partnerships' (p.94). Among the key features of the GEI are:

- Participation of both non- and for-profit sectors in the provision of education goods and services;

- Global scale operations, including cross-border supply of educational services such as online learning technologies;

- Competition between businesses, and with conventional public providers in ways that incentivise public providers to operate like business actors;

- For-profit motives as the main drivers for private actors, and some non-profit and state actors, to participate in education;

- Access to financial capital markets to support operational expansion, including venture capital, equity funds and other forms of investment; and

- Various integrations, mergers and acquisitions between companies and organisations in the education sector (Verger et al 2016).

Much research has detailed the resultant effects of this phenomenon, including various claims that market mechanisms are working to insert private sector interests into the realms of public policy provision (Ball & Youdell, 2008; Ball & Junemann, 2012; Reckhow, 2012). There are commensurate concerns here that the private sector can shape 'solutions' to education 'problems' in ways that are commercially beneficial to themselves or their shareholders (Riep, 2019).

In general, the GEI combines privatisation and commercialisation as two distinct – but often related – phenomena in the provision of public services. Hogan and Thompson (2017) propose that privatisation happens *to* schools through the development of quasi-markets through institutional policy and structures e.g. state regulated private sector participation in schooling. Commercialisation happens *in* schools and involves the creation, marketing and sale of educational goods and services for commercial gain. As we detail in our mapping below, the global response to Covid-19 shows the overlapping nature of privatisation and commercialisation.[4] For example, privatisation is apparent as a 'policy tool' that is reflecting and responding to a rapid shift in the modality of schooling. Public-private partnerships and commercial contracts are being formulated as part of a deliberate government strategy to use the private sector to help move schooling online in response to the crisis. Commercialisation, on the other hand is about how actors profit from the 'commodification' of education. Interestingly, commercialisation is simultaneously prolific and hidden in our mapping of the global response to Covid-19. The sheer scale of products and services on offer to schools, teachers and parents to assist with online learning is mind boggling. Yet, many of these are being offered 'free' for a limited time. We would argue, like many others, that this social response is a key feature of 'disaster capitalism' (Klein 2007) and evidence of how 'pandemic politics' is beginning to affect practices of schooling, with the global education industry likely capitalizing on an avenue of future profitability (Williamson, Eynon & Potter 2020).

2. Policy mobility

It is now clear that the dominant education policy preoccupation globally is how to deliver schooling without schools and degrees without campuses. The primary policy solution has been identified as digital technology and online 'remote learning' (West, 2012). Despite

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4   Hogan, A. (2018, December 12). Marketisation, privatisation and commercialisation in education: Defining key terms. Unite for Quality Education. https://www.unite4education.org/global-response/marketisation-privatisation-commercialisation-in-education-defining-key-terms/

considerable debate about the difference between well-designed online learning and emergency remote learning[5], consensus on digitally-mediated distance education has become a remarkable instance of policy mobility (Williamson, 2019). According to policy researchers, rather than solely emanating from central authorities, many contemporary policy processes are now distributed across different sectors, giving non-governmental organisations, businesses and other experts much more influence in the direction of policy, the dissemination of policy ideas, the formulation of policy advice, and the enactment of policies (Ball, 2012; Gunter & Hall, 2017; Fontdevila & Verger, 2019). A single policy may be the result of myriad interests and concerns being slowly translated and aligned into shared objectives. Policies also travel across borders, are borrowed, shared, adapted and recontextualised, and are fashioned and refashioned through the involvement of diverse actors from a range of sectors (Steiner-Khamsi & Waldow, 2012).

The mobile, networked policymaking condition has proven ideal to the expansion of educational technologies and media. Edtech is increasingly present within formal education policies as a result of the significant effort of advocacy networks, think tanks, consultancies, campaign coalitions, and business lobbying. Policy discourses and agendas around digital education, 'personalised learning' and 'AI in education' have travelled at speed around the world, lubricated by network relations (Williamson, 2017). These edtech power networks are actively intervening in education systems in ways that suggest new forms of power and influence over education and its future. While edtech has long been presented as a powerfully 'disruptive' force in education, during the ongoing coronavirus crisis, new pandemic power networks have begun to coalesce around claims that edtech is not just disruptive, but palliative too.

3. Edtech markets

Schools have long been considered brick and mortar institutions, but with the rise of the platform economy, virtual schools are becoming more prominent. For example, in 2017, Pearson observed that it was the second largest provider of virtual schools in the US, and that there was a need to capitalise on a rapidly growing $1.5 billion market. Like many commercial operators, Pearson's business strategy – before Covid-19 – was to accelerate its shift towards the reduced need for schools and teachers in order to grow the market for data-driven

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5   Hodge, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, March 27). The difference between emergency remote teaching and online learning. Educause Review. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

personalised learning that can be provided direct to consumers (Sellar & Hogan, 2019). In the past few years, Pearson has adopted a 'digital first' strategy, begun ditching its production of textbooks, and embraced new forms of 'platform' delivery (Williamson, 2020). It has also reconceived its customers as 'Gen Z' student-consumers who prefer 'on-demand streaming' content to conventional educational delivery, and developed a 'Global Learning Platform' to position itself as the 'Netflix of Education'.[6]

Since the onset of the pandemic, edtech investments have spiked, and as the investment bank BMO Capital Markets claims, 'While we are uncomfortable citing "winners" in the coronavirus situation, some companies … that specialise in online education could see increased interest should the situation worsen'.[7] BMO Capital Markets singled out major market leaders including K12 and Pearson as potential for-profit beneficiaries of mass education closures. Indeed, by June 2020 Pearson announced a new £350million, ten-year finance scheme to support online learning for the long term,[8] backed up by statistics showing the impact of the company on 'learning through a pandemic'.[9] These companies have already created the technologies to support 'remote' forms of teaching and learning across both the schooling and higher education sectors (Williamson, 2020). Thus, these are not changes that Pearson and its competitors are simply offering up, opportunistically, in response to sudden coronavirus measures. Instead, they are part of a concerted long-term strategy by the edtech industry to actively reorganise public education as a market for its products, platforms and services (Sellar & Hogan, 2019). The global pandemic has appeared as an opportunity to rapidly grow market share, generate competitive advantage, and boost stock market valuation, with a view to long-term consolidation of market share and to reshaping public education at the same time.

The global coronavirus pandemic is also an opportunity to produce very large quantities of student data, as students are forced online into data-intensive digital learning environments at unprecedented scale. For researchers and organisations invested in data scientific forms of analysis in education, as Jonathan Zimmerman put it in *The Chronicle of Higher Education*, coronavirus is an opportunity for a 'great online learning experiment':

6   High, P. (2018, August 20). How 174 year old Pearson is developing the Netflix of education. *Forbes*. https://www.forbes.com/sites/peterhigh/2018/08/20/how-174-year-old-pearson-is-developing-the-netflix-of-education/#24cd145613c0
7   EdSurge. (2020, March 5). Analysts watch for coronavirus impact on edtech stocks. *EdSurge*. https://www.edsurge.com/news/2020-03-05-public-markets-watch-for-coronavirus-impact-on-edtech-stocks
8   Pearson. (n.d.). *Social bond framework*. Pearson. https://www.pearson.com/investors/social-bond-framework.html
9   Pearson. (2020). *Learning through a pandemic*. Pearson. https://www.pearson.com/content/dam/one-dot-com/one-dot-com/global/Files/investors/social-bond/Pearson_Pandemic_3.pdf

Coronavirus ... has created a set of unprecedented natural experiments. For the first time, entire student bodies have been compelled to take all of their classes online. So we can examine how they perform in these courses compared to the face-to-face kind, without worrying about the bias of self-selection. It might be hard to get good data if the online instruction only lasts a few weeks. But at institutions that have moved to online-only for the rest of the semester, we should be able to measure how much students learn in that medium compared to the face-to-face instruction they received earlier.[10]

The working assumption here is that coronavirus is a natural experimental opportunity for education data scientists – both those in academic education research and analysts working in edtech companies and other edu-businesses – to demonstrate the effectiveness of online education over face-to-face teaching. Though the results of such experimentation remain to be seen, it is clear many actors both within academic research and commercial edtech see the pandemic as a significant period for rolling out, testing, and proving the beneficial value of digital learning services, platforms and products.

4. Data collection and ownership

This rise of edtech, and in particular the rapid response to Covid-19, has not resolved any of the outstanding issues and challenges associated with the broad scale adoption of online learning. Prominent here are concerns surrounding data collection and ownership. Every digital platform and separate online service has its own capacity to track, store and analyze student usage, outcomes and interactions at a granular level. While this is interpreted within the edtech industry as a significant opportunity to improve, and personalise learning, it has also raised genuine concern for the potential misuse of data.

The collection and use of student digital data raises questions about privacy, consent, ownership, bias, as well as openness (Sellar & Hogan, 2019). While users actively give consent to sharing their data when they enter it into online forms, they are typically less aware that data is also collected about their interactions on platforms. This can make it difficult for users of digital services to understand exactly what data is collected and for what purposes (Willis, Slade & Prinsloo, 2016). This relationship

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10   Zimmerman, J. (2020, March 10). Coronavirus and the great online learning experiment. *The Chronicle of Higher Education*. https://www.chronicle.com/article/Coronavirusthe-Great/248216

can complicate questions about data ownership and responsibility, as well as accountability for good management of data. The risk of data breaches has become part of the lifecycle of large edtech companies (Royal Society, 2017). Many data privacy statements are purposively ambiguous so that data might be commercialised, either by selling it onto third parties (Bulger, McCormick, and Pitcan, 2017) or using it for internal processes of product development, particularly large scale data mining and analytics that is needed to progress the development of Artificial Intelligence in education (Sellar & Hogan, 2019). User data can also be collected, aggregated, processed and traded to create personalised online advertising, which carries particular concerns for privacy and intrusiveness (Estrada-Jiménez, Parra-Arnau, Rodríguez-Hoyos, & Forné, 2017).

Research has also identified that students can feel a loss of autonomy due to continuous monitoring of their online learning activities (Majeed, Baadel & Ul Haq, 2017). For example, the recent concerns raised by higher education students about the use of ProctorU - a service that monitors a student taking an exam through eye movement, noise and keystrokes, and also turns off copy and paste functionality, turns off background apps and prevents any new web pages or tabs being opened - has been widely critiqued as eroding a student's right to privacy.[11] Similarly, there are various Intellectual Property (IP) issues at play, where many edtech services rely on the creation of content by students that they can then mine and use for pattern detection - to sell their commercial services. For example, TurnItIn exists in this ethical 'greyzone' where it has been challenged multiple times on copyright infringement and questions of data ownership.[12] Moreover, research has pointed to issues of commercialisation more broadly, where products are designed by software developers, based on algorithms best suited to profit making by corporate entities (Williamson, 2017). New forms of data analytics have the ability to usher in new forms of discrimination and the move towards personalised or individualised learning tends to reduce curriculum to what can be produced (or coded) online, consequently limiting the broader social goals of schooling (Wyatt-Smith, Lingard & Heck, 2019). It also raises ethical questions regarding emerging inequalities of access to digital services (Sellar & Hogan, 2019), particularly within and across national systems.

A point we return to later in this document is that the response to Covid-19 is haphazard and plays out differently in different contexts; in

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11   Mason, R. (2020, March 29). Privacy concerns raised over exam provider, ProctorU. *Honi Soit*. http://honisoit.com/2020/03/usyds-online-exam-provider-proctoru-raises-privacy-concerns/
12   Zimmerman, T. (2017). Twenty years of Turnitin: In an age of big data, even bigger questions remain. UC Santa Barbara. https://escholarship.org/content/qt3fc6t3d6/qt3fc6t3d6.pdf#page=18

some places it appears the state is driving increased partnerships with edtech players, in other settings, the edtech industry is banding together to show systems, schools and even parents, what the private sector can offer them in the absence of an orchestrated public response to crisis. In general, the response to Covid-19 accentuates the broad privatisation of schooling, and leaves many of the issues discussed above, unanswered or ignored. Organisations like Privacy International have already raised concern that the accelerated uptake and distribution of edtech solutions in schooling is happening without any substantive analysis of risk. They make the point that 80% of the edtech tools reviewed in 2019 by Common Sense - a non-profit US edtech evaluator - did not meet their minimum level of sufficient safeguards.[13] Thus, there are real and active concerns for the safety of students using a vast array of edtech products as 'solutions' to the Covid-19 crisis.

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13   Privacy International. (2020, April 24). Schools and Covid-19. PI. https://privacyinternational.org/news-analysis/3709/schools-and-covid-19

II. Mapping organisations and networks

In this main substantive section we map the commercial platforms and products being widely used in schooling during the pandemic, as well as the players and coalitions coming together in response to the Covid-19 crisis. We have been purposively selective in this exercise. It is not possible to capture the entirety of the edtech response to Covid-19. Instead, we have selected organisations and networks that allow us to draw out key dynamics and issues of education privatisation and commercialisation that are emerging, growing and shifting through this pandemic. We have organised this section into a series of seven interrelated and overlapping themes:

1. International organisations and coalitions;

2. Government-commercial partnerships;

3. Commercial coalitions;

4. Intermediaries;

5. Ed-tech market-makers;

6. Big tech companies enrolling schools; and

7. The edu-business sector.

Throughout these cases we clearly evidence a growing demand for edtech solutions to the Covid-19 pandemic.

1. International organisations and coalitions

International organisations with long-term aims to influence education policy and practice have actively sought to form large-scale coalitions, funding initiatives and partnerships to develop educational responses and recovery from the Covid-19 crisis. These organisational coalitions and funding schemes have formed to ensure continuity of education and learning, especially by promoting and supporting the accelerated rollout and uptake of educational technologies. As a consequence, the actions of international organisations have become catalysts of expanding

commercialisation as they have opened up opportunities for technology and education businesses to expand product reach and penetration into new educational settings, to take a leading role in the provision of pedagogy and curriculum resources, and to act as delivery partners for emergency forms of global education policy. Moreover, these coalitions have begun to enact their longer-term reformatory aspirations within the context of the pandemic, utilising the emergency as an opportunity to reimagine and reinvent education systems according to their own organisational agendas and visions.

Covid-19 edtech funding programs

The funding initiatives are primarily aimed at low and middle income countries, and are designed to help mitigate the effects of the pandemic on the poorest and most vulnerable children. The Global Partnership for Education (GPE) dedicated a US$500m fund for up to 67 eligible developing countries to 'ensure learning can continue', making it 'the largest provider of funds dedicated solely to education in the global coronavirus response.'[14] The funds have been awarded to Ministries of Education and their partners to assist them in purchasing laptops and tablets for use in distance learning, producing educational radio and television programs, distributing materials such as textbooks to households, equipping schools to re-open, and collecting 'data to know that learning is happening', while also 'building resilient education systems for the future'.[15] A key aspect of the emergency program involves the collection of data to track student participation and progression in remote learning, which is closely related to GPE's institutional priority of supporting developing countries to develop strong data systems: 94% of its awards in 2018 included funding for educational management information systems or learning assessment systems.[16] The GPE, a trust fund of the World Bank, is one of the largest and most prominent transnational multi-stakeholder partnerships in education, with members that include private foundations and private companies including Microsoft and Pearson, as well as donor and developing countries, multilateral organisations, civil society and the teaching profession.. The GPE expectation with its Covid-19 grants is that new public-private partnerships will be developed, such as with telecommunications companies to organise internet connectivity and

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14 Global Partnership for Education. (2020, June 3). Factsheet: GPE and Covid-19 (coronavirus). GPE. https://www.globalpartnership.org/content/factsheet-gpe-and-covid-19-coronavirus
15 Global Partnership for Education. (2020). Response to Covid-19 (coronavirus) pandemic. GPE. https://www.globalpartnership.org/gpe-and-covid-19-pandemic
16 Global Partnerships for Education. (2020). Data systems. GPE. https://www.globalpartnership.org/what-we-do/data-systems

data plans or with local enterprises to create online learning platforms and resources.[17]

The GPE is a partner of Education Cannot Wait, a fund administered by UNICEF from international humanitarian aid contributions and private donations, which has prioritised 'scaling up distance education programs, particularly via interactive radio'.[18] These GPE activities, and its partnership arrangements, need to be understood in the context of GPE's wider approach to public-private partnerships to improve education in developing countries. In particular, GPE led a Data Solutions program 'to improve the availability and use of accurate and timely education data in developing countries, and mobilised support from the private technology sector (including Microsoft and HP) 'to co-create innovative solutions and new technologies with other development stakeholders to drive improvements in education at community, regional, national and ultimately global levels'. While there is no doubt the GPE's funding has been crucial to enabling low and middle income countries to develop distance learning capacity during the pandemic, this has clearly also involved significant investment in the purchase of technology hardware and software, the intensification of public-private partnerships, and the expansion of educational data systems in ways that reflect GPE's strategic focus on data-driven educational management and policymaking.

Other funding initiatives have emphasised crisis mitigation responses that more specifically promote educational technologies. The World Bank announced a Strategic Impact Evaluation Fund 'to fund experimental and quasi-experimental evaluations that examine the extent to which technology can accelerate learning and skills for both children and adults in low- and middle-income countries who are currently not learning adequately with their current set of services'.[19] The Covid-19 emergency funding call prioritises projects building quantitative evidence, primarily through randomised control trials, on 'remote learning approaches that achieve high coverage, high uptake, and learning', including the benefits and costs of scalable and affordable technology-based interventions; successful implementation of technology-based interventions; innovative uses of data, including administrative data and data from apps used by families and service delivery organisations; and the use of machine learning such as 'adaptive learning software'.

17   Global Partnerships for Education. (2020). Pakistan. GPE. https://www.globalpartnership.org/where-we-work/pakistan

18   Education Cannot Wait. (2020). The fund. ECW. https://www.educationcannotwait.org/about-ecw/

19   World Bank. (2020, March 23). Call for proposals 5: Can technology accelerate learning and skills. The World Bank. https://www.worldbank.org/en/programs/sief-trust-fund/brief/call-for-proposals-can-technology-accelerate-learning-and-skills

The World Bank strategic fund, while not directly supporting commercial organisations, is building evidence to support educational technology solutions to mass educational disruption. It also extends the World Bank's existing provision of guidance and resources dedicated to remote learning, edtech and Covid-19,[20] its international 'best practice' catalogue of how different countries are using edtech to support access to remote learning,[21] and a further resource list compiled by the World Bank's Edtech Team.[22] These documents highlight partnerships with internet service providers to enable online learning on subsidised data plans, use of commercial platforms for remote teaching and learning (such as Google's G Suite for Education, Microsoft 365, YouTube channels), online learning providers (EdModo, Schoology, Khan Academy), learning management systems (Moodle, Canvas), mobile e-learning apps, videoconferencing (Zoom, Skype, Amazon Chime), social media communication tools (WhatsApp, Google Hangouts) as well as government-led portals, resource banks, websites, online learning platforms, and radio and television broadcasting. As such, the World Bank has become a key global promoter of commercial edtech and associated technologies during the Covid-19 crisis and, along with GPE, has been instrumental in supporting public-private partnerships between government agencies and private sector technology suppliers in developing countries.

International coalitions

Coalitions of varying sizes and intensity have formed to promote educational technologies as emergency responses to the pandemic, and to promote such approaches as longer-term solutions to schooling. One example is a collaborative edtech network facilitated by the UK venture investment company Emerge Education.[23] Badged as an 'EdTech industry collaboration to help schools and colleges deal with CV19 and the need for home learning,' the online summit featured a diverse cross-sector mix of US-based tech businesses (Adobe, Amazon Web Services, Google, Microsoft), alongside UK-based edtech and education businesses and their supporters.[24] Its

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20   World Bank. (2020). *Remote learning, edtech and Covid-19*. The World Bank. https://www.worldbank.org/en/topic/edutech/brief/edtech-covid-19

21   World Bank. (2020). *How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the Covid-19 pandemic*. The World Bank. https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-covid-19-pandemic

22   World Bank. (2020, April 10). *Remote learning, distance education and online learning during the Covid-19 pandemic: A resource list by the World Bank's edtech team*. The World Bank. http://documents.worldbank.org/curated/en/964121585254860581/pdf/Remote-Learning-Distance-Education-and-Online-Learning-During-the-COVID19-Pandemic-A-Resource-List-by-the-World-Banks-Edtech-Team.pdf

23   Emerge Education. (2020). *Investing in the future of learning and work*. Emerge Education. https://emerge.education/

24   Emerge Education. (2020, March 27). Edtech industry collaboration to help schools and colleges deal with CV19 and the need for home learning. Hopin. https://hopin.to/events/help-for-home-learning

key aim was to help school leaders and teachers learn how 'curated EdTech resources (both online and offline) are available to set up effective homeschooling.' Emerge Education has positioned itself as a key investor in UK-based edtech, with a portfolio of investments that includes educational platforms, learning management systems, and apps aimed at both the HE and schools markets.

Another emerging coalition, the COVID-Education Alliance (COVIDEA), coordinated by the International Science Council, aims to make 'a substantive contribution to addressing the educational challenges associated with the pandemic' and 'digital education for the future'.[25] Its proposed activities include the creation of new algorithms to find and assess existing courses online and identify tools and resources for teachers; evaluating technological solutions, on-line courses, tools and practices for their potential to substantially contribute to addressing the educational challenges associated with the pandemic; making operational recommendations to governments, academic bodies, and the private sector; and 'providing intelligence and insight on the socio-economic and skill changes needed to transition towards more sustainable development patterns in a time of deep technological changes'. COVIDEA exemplifies the ways that international coalitions have formed both to respond immediately to new educational needs, such as locating online resources, and to develop longer-term proposals and blueprints for large-scale educational transformation to suit technological changes.

UNESCO is a key international organisation in advising nations around the world on emergency remote education. By the end of March 2020, its Global Education Monitoring project reported that 'all countries are introducing or scaling up existing distance education modalities based on different mixes of technology', but noted significant inequalities in access to ICT-based learning.[26] To address this equity gap, UNESCO launched a Global Education Coalition as a 'multi-sector partnership to provide appropriate distance education for all learners'.[27] Specifically, the coalition aims to help countries mobilise resources and implement 'innovative and context-appropriate solutions to provide education remotely, leveraging hi-tech, low-tech and no-tech approaches', identify 'equitable solutions and universal access', ensure 'coordinated responses and avoid overlapping efforts', and facilitate 'the return of

25   International Science Council (2020). Call for nominations: COVID-Education Alliance. ISC. https://council.science/call-for-nominations-covidea/
26   GEM Report. (2020, March 24). How are countries addressing the Covid-19 challenges in education? A snapshot of policy measures. World Education Blog. https://gemreportunesco.wordpress.com/2020/03/24/how-are-countries-addressing-the-covid-19-challenges-in-education-a-snapshot-of-policy-measures/
27   UNESCO. (2020, March 26). UNESCO rallies international organisations, civil society and private sector partners in a broad Coalition to ensure #LeanringNeverStops. UNESCO. https://en.unesco.org/news/unesco-rallies-international-organisations-civil-society-and-private-sector-partners-broad

students to school when they reopen to avoid an upsurge in dropout rates.'

The coalition enrolled partners from across sectors, including international multilateral organisations (UNICEF, the WHO, World Bank, Global Partnership for Education, OECD, Education Cannot Wait), civil society/not-for-profits (Khan Academy, code.org, ISTE), private sector companies (Microsoft, Facebook, Google, Weidong, Zoom, Coursera, Moodle), and a variety of other media organisations and networks (although UNESCO 'does not endorse any product, service, brand or company' according to a legal notice)[28]. Moreover, as part of its Covid-19 response, UNESCO compiled a resource bank of relevant educational applications, platforms and resources to support distance education.[29] 'While these solutions do not carry UNESCO's explicit endorsement, they tend to have a wide reach, a strong user-base and evidence of impact', it stated. The resource bank included learning management systems (Google Classroom, Edraak, EdModo, Nafham, Moodle, ClassDojo, Schoology, SeeSaw), mobile apps, online learning platforms (EdX, Coursera, Canvas, Udemy, FutureLearn, Khan Academy), live video communication platforms (DingTalk, Google Hangouts, MS Teams, WeChat, WhatsApp), and a range of other resources for teacher-created content hosting and self-directed student learning.

An additional objective of the UNESCO Global Education Coalition, however, is to look beyond the context of the current emergency to catalyse longer-term transformations to education:

Investment in remote learning should both mitigate the immediate disruption caused by COVID-19 and establish approaches to develop more open and flexible education systems for the future.[30]

The technology partners are well-established private companies with the capacity to rapidly scale up to new territories in order to address inequalities in technology access. But the short-term emergency response also needs to be understood in terms of the longer-term aims of increasing 'investment' in online learning technologies in order to build 'education systems for the future'. Commercial technology organisations such as Google and Microsoft have experienced huge escalations in their user base during the pandemic, propelled by unofficial endorsement by UNESCO. The coalition has also brought substantial credibility to private sector technology companies and

28   UNESCO. (2020). Legal notice. UNESCO. https://en.unesco.org/covid19/legalnotice
29   UNESCO. (2020). Distance education solutions. UNESCO. https://en.unesco.org/covid19/educationresponse/solutions
30   UNESCO (2020) Global Education Coalition. UNESCO https://en.unesco.org/covid19/educationresponse/globalcoalition

edtech businesses, potentially raising the public image of these organisations by associating them with efforts to enhance digital and educational equity during the emergency.

UNESCO's Institute of Statistics has also released guidance on collection of 'student performance data' during and following the pandemic—as part of its role in monitoring progress toward SDG4— and has advised national governments to focus on the collection and reporting of 'essential data' on: student participation in all platforms of education delivery disaggregated by individual student characteristics, such as gender and poverty; teacher participation in all platforms of education delivery disaggregated by individual teacher characteristics, such as gender and contract status; and use of quick and short tests for the frequent measurement of student learning. These 'essential data' will ultimately act as an evidence base for assessing the effectiveness of online learning platforms in promoting and improving students' participation and performance in education, potentially assisting private technology companies to enhance their penetration into new territories as evidence-based solutions to persistent inequalities in education that pre-existed, but have been exacerbated by, the Covid-19 emergency.

The OECD is a major multilateral partner of the UNESCO coalition, and has also positioned itself as a source of expert advice, policy recommendations, and educational leadership during the pandemic. Its emphasis is overtly on the benefits of educational technologies, not just as a short-term emergency mode of delivery but as long-term transformative forces in education systems around the world. As part of a package of policy proposals covering many governmental sectors,[31] the OECD published a briefing entitled 'Education responses to Covid-19: Embracing digital learning and online collaboration', with policy proposals for national governments to tackle school closures:

Every week of school closure will imply a massive loss in the development of human capital with significant long-term economic and social implications. While this is a strong stress test for education systems, this is also an opportunity to develop alternative education opportunities. ... The current wave of school closures offers an opportunity for experimentation and for envisioning new models of education and new ways of using the face-to-face learning time.[32]

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31   OECD. (2020). Tackling coronavirus (Covid-19): Contributing to a global effort. OECD. http://www.oecd.org/coronavirus/en/
32   OECD. (2020, March 23). Education responses to Covid-19: Embracing digital learning and online collaboration. OECD. https://read.oecd-ilibrary.org/view/?ref=120_120544-8ksud7oaj2&Title=Education%20responses%20to%20covid-19:%20 %20Embracing%20digital%20learning%20and%20online%20collaboration

These opportunities, according to the OECD, include exploring 'different time and schooling models' to enable students to 'learn in different places and at different times' with the support of digital learning solutions' that might 'bring communities, homes, and schools closer together'. A further opportunity is empowering teachers to 'test out different digital learning solutions, and understand how technology can be used to foster deeper student learning'. A subsequent OECD 'Framework to guide an education response to the COVID-19 Pandemic of 2020' emphasised the 'imperative' to invest in the relevant technological infrastructure for remote learning, such as providing devices and connectivity to students and teachers, and developing 'a model of online learning that allows the greatest possible interaction in real time among students, among students and teachers, and with parents'.[33] The framework document also reported on 'unexpected positive educational results of the changes caused by the crisis', including 'the introduction of technologies and other innovative solutions and an increase in the autonomy of students to manage their own learning'.

The OECD's pursuit of positive opportunities for re-envisioning education during the pandemic is part of its much longer education reform ambitions focused on building 'human capital' for the 'digital economy' through the application of new educational technologies and 'personalised learning' approaches. This is an overtly political project, aimed at ensuring future economic productivity through educational reforms, that the OECD is now seeking to enact through the 'opportunity' of the Covid-19 pandemic. The OECD's education director Andreas Schleicher even claimed:

'It's a great moment.... All the red tape that keeps things away is gone and people are looking for solutions that in the past they did not want to see. ... Real change takes place in deep crisis. You will not stop the momentum that will build'.[34]

2. Government-commercial partnerships

Governments and education departments around the world have been working to provide technology solutions to enhance remote learning opportunities for students, many – especially in developing contexts – under the guidance of international organisations such as the World Bank,

33   Reimers, F. & Schleicher, A. (2020). A framework to guide education response to the Covid-19 pandemic of 2020. OECD. https://read.oecd-ilibrary.org/view/?ref=126_126988-t63lxosohs&title=A-framework-to-guide-an-education-response-to-the-Covid-19-Pandemic-of-2020

34   Anderson, J. (2020, March 30). The coronavirus pandemic is reshaping education. *Quartz.* https://qz.com/1826369/how-coronavirus-is-changing-education/

UNESCO and OECD, or supported by funding from Global Partnership for Education. This has included rapid upscaling of pre-existing government learning platforms, the broadcasting of educational content on free-to-air television, national radio, and YouTube, and a considerable investment in ensuring that, 1) students have access to devices and the internet, and 2) that schools and teachers have the ability to host online virtual classrooms.[35] These commitments, often made on a concern for equity, have demonstrated a particular reliance on the commercial sector, or at least on partnerships between governments and commercial providers. For example, in the UK, the government has committed over £100 million to boost remote education capacities of all students.[36] This includes the provision of laptops or tablets and 4G hotspot devices for disadvantaged children, and moreover, allows all schools to access Google for Education or Microsoft Office 365 Education free of charge to ensure that all schools have a platform to deliver remote learning. The Department for Education invested £14 million in 'expert help for staff to get set up' on either the Google or Microsoft system, despite claims that the government's investment in technical support for Google and Microsoft was 'restrictive' and failed to recognise the much wider range of platforms for online learning already used by or available to schools.[37]

In China, school closures and rapid shifts to online education were characterised by surging use of AI-based products and services, such as VIPkids, Squirrel AI, SenseTime and Yuanfudao.[38] During the period of school shutdowns in major Chinese cities, the Beijing-based Yuanfudao edtech company received the largest venture capital investment ever recorded for a startup in the edtech sector for its AI-based homework and tutoring platform, with its US$1bn investment taking its total value to an estimated $7.8bn.[39] Yuanfudao also invested itself in coronavirus support with donations and free AI-enabled online classes and products:

During the New Coronary Pneumonia epidemic, Ape Counseling Online Education took the lead in donating RMB 10 million to support Wuhan, and launched free live classes and opened all the core functions of its learning products to help primary and secondary school students nationwide study at home.[40]

35   UNESCO. (2020). National learning platforms and tools. UNESCO. *https://en.unesco.org/covid19/ educationresponse/nationalresponses*

36   Department for Education UK. (2020, April 24). Schools to benefit from education partnership with tech giants. Gov.UK. https://www.gov.uk/government/news/schools-to-benefit-from-education-partnership-with-tech-giants

37   Gibbons, A. (2020, April 28). DfE's focus on Google and Microsoft 'is restrictive'. *Times Educational Supplement.* https://www.tes.com/news/dfes-focus-google-and-microsoft-restrictive

38   Qu, T. (2020, February 5). China's traditional schools embrace online learning as coronavirus forces students to stay home. South China Morning Post. https://www.scmp.com/tech/enterprises/article/3048891/chinas-traditional-schools-embrace-online-learning-coronavirus

39   Dai, S. (2020, April 1). Online education start-up Yuanfudao raises US$1bn as sector heats up on coronavirus impact. *South China Morning Post.* https://www.scmp.com/tech/start-ups/article/3077915/online-education-start-yuanfudao-raises-us1bn-sector-hots

40   Yuanfudao. (2020). https://www.yuanfudao.com/

The major investment in Yuanfudao and its own commitment to philanthropic donations and free product access is illustrative of how AI-based learning technologies have expanded in reach during the pandemic, reaching unprecedented numbers of students in their own homes, whilst also developing their charitable profiles for supporting educational access and equity.

According to an analysis of Chinese AI in education during the pandemic, AI-based edtech products 'have the potential to reshape the role of the traditional teacher' and 'can, for example, replace tasks such as face-to-face instruction with video tutorials, and automate the delivery of student diagnosis and feedback with adaptive learning systems', but they may also entail the collection of sensitive personal, biometric and facial data:

> *If schools are capable of tracking every keystroke, knowledge point and facial twitch, they are effectively furnishing either a technology company or the Chinese state with an eternal ledger of every step of a child's development. This is potentially problematic because, whereas the human teacher assumes change, AI assumes continuation. ... [A]n intelligent tutoring system could not only store that information and tailor a personalised pathway for the student in the first grade, it may extrapolate that information many years later, when the student is in high school.[41]*

China's adoption of AI in education is the result of large-scale venture capital investment and increasing parental willingness among more wealthy families to pay for private tutoring and supplemental education services and products, but is primarily driven by public-private partnership arrangements and the strong support of the state for private sector technologies (Knox, 2020). SenseTime, an 'online AI learning platform', was offered for free nationwide during the pandemic with the argument that AI-based education would help secure longer-term economic advantage for the Chinese state. 'Today's education will turn into tomorrow's technology and bear economic fruit the day after,' the company statement said. 'As AI serves its value in big data, disease screening and diagnosis amid the coronavirus outbreak, it has become a brand new productive force of social development'.[42]

In other countries, rather than governments brokering large scale commercial partnerships, they have adopted a more individualised

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41   Liu, Y. (2020, May 18). The future of the classroom? China's experience of AI in education. Nesta. https://www.nesta.org.uk/report/the-future-of-the-classroom/#content

42   Dai, S. (2020, February 18). China's AI champion SenseTime latest to offer online learning after students told to stay home amid coronavirus outbreak. *South China Morning Post*. https://www.scmp.com/tech/enterprises/article/3051183/chinas-ai-champion-sensetime-latest-offer-online-learning-after

approach of vouchers and grants. In the US, Education Secretary, Betsy DeVos, has announced $180 million in 'relief' money that can be applied for by parents or states to expand virtual education.[43] This includes 'microgrants' for families to access private education services (including, for example, tutoring, summer programs, tuition to an online program, test preparation, access to textbooks, etc.), the creation of state-wide virtual schools or programs, and the creation of 'models for providing remote education not yet imagined'. Winning states are likely to receive grants in the order of $5 to $20 million depending on their initiative.

Other governments have not necessarily advertised funding for online learning initiatives but have offered guidance about which commercial providers might provide the most useful solutions. In Indonesia for example, the Minister of Education and Culture, Nadiem Makarim, issued a circular for all schools in early March recommending that students could be encouraged to learn from home through the adoption of one of eight platforms, including Indonesian-based ed tech companies like Ruangguru, Sekolahmu, Rumah Belajar, Zenius and Kelas Pintar, as well as international players, including Google for Education, Microsoft 356, and Quipper School. Makarim has since acknowledged that technological 'discrepancies' between schools has meant that home-based learning is not effective for all students.[44] The Ministry has thus launched a series of education programs to be televised by the state-owned broadcaster from April 13 to help those students learn from home that have limited access to internet due to economic challenges or geographical location.

3.   Commercial coalitions

During the Covid-19 pandemic there has also been a rapid coalition building of commercial providers. Often, not-for-profit organisations are assembling these coalitions and providing curated lists of 'free' resources to support the transition to online learning, targeting either teachers or parents. The general claim is that these providers are coming together to offer limited-time free access to resources, guides, webinars and podcasts to help teachers, parents and students navigate the 'unchartered waters' of online learning. Some of these commercial coalitions are highlighted below, including a brief overview of what they're offering during the Covid-19 pandemic, as well as their role with schooling

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43   Barnum, M. (2020, April 27). DeVos to states: For extra relief money, create a virtual school or voucher like program. *Chalkbeat*. https://www.chalkbeat.org/2020/4/27/21239017/betsy-devos-coronavirus-states-grants-vouchers-virtual-schools

44   Pinandita, A. (2020, May 15). Home learning hindered by technology gap, Nadiem acknowledges. *The Jakarta Post*. https://www.thejakartapost.com/news/2020/05/15/home-learning-hindered-by-technology-gap-nadiem-acknowledges.html

previously. We feel this helps to hypothesise what exactly motivates these coalitions to form, and perhaps consider what it is they hope to achieve beyond the life of the pandemic.

Commercial online school solutions

The not-for-profit International Society for Technology in Education (ISTE) and EdSurge – which was merged under ISTE in 2019 for an undisclosed amount - has developed Learning Keeps Going.[45] This website has been designed to support educators and parents during the extended school closures caused by Covid-19, and includes a curated list of free tools and resources, as well as an 'Educator Help Desk' where experts can answer online learning questions. ISTE received $500,000 in funding from the Chan Zuckerberg Initiative (CZI) in support of this initiative, and has assembled over 60 non-profit organisations in what they call 'The Covid-19 Education Coalition'. This coalition is 'creating resources focused on seven areas: centering equity; connectivity; international engagement; personalised learning; social emotional learning; safety, privacy and digital citizenship; and higher education'.[46] To date, this coalition has curated 913 'free tech resources for learning'. Interestingly, one of the categories that users can filter this list by is 'duration of free access', and only 312 resources are considered 'always free'. This provides some basic insight into the sheer number of resources that are being offered free for a limited time during the Covid-19 crisis. For example, included within this list is CodeMonkey.[47] Schools can usually access a plan for $39 per child, per year, but currently, full access is being granted to closed schools 'until further notice'.

An alternative coalition was announced by Common Sense Media. Common Sense describes itself as an independent, non-profit, research-backed, 'leading source of entertainment and technology recommendations for families and schools'. It is funded primarily by a large number of private foundation partners with interests in children's use of technology, media and edtech, among them the Bill and Melinda Gates Foundation and the Chan Zuckerberg Initiative.[48] In response to Covid-19, Common Sense similarly organised a group of 25 partner organisations that 'share a vision' to help teachers and families learn

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45   Learning Keeps Going. (2020). Covid-19: Learning Keeps Going. Learning Keeps Going. https://www.learningkeepsgoing.org/
46   ISTE. (2020, March 24). ISTE convenes sectorwide response to support educators in responding to Covid-19. ISTE. https://www.iste.org/explore/iste-convenes-sectorwide-response-support-educators-responding-covid-19
47   CodeMonkey. (2020). CodeMonkey's response to Covid-19. CodeMonkey. https://www.codemonkey.com/covid-19/
48   Common Sense Media. Foundation partners. Common Sense Media. https://www.commonsensemedia.org/about-us/supporters/foundation-supporters

from home, and launched Wide Open School.[49] As described by Common Sense, 'Wide Open School is a free collection of the best online learning experiences for kids curated by the editors at Common Sense. There is so much good happening, and we are here to gather great stuff and organise it so teachers and families can easily find it and plan each day'. Interestingly, Wide Open School's main page makes an explicit note on privacy:

While we have tried to favour sites that don't require login, some do require registration. The provided resources include links to external websites or applications that are governed by their own privacy policies or information-collection practices, which may be substantially different from those of Common Sense. We encourage you to review the privacy policies and information-collection practices of any external websites and apps before using them with children. Many organisations have stepped up and made their resources free for kids during this critical time.

This website can redirect users to external commercial webpages, including the likes of Apple, Amplify, Google, Khan Academy, Scholastic, Zoom, YouTube and others. It can, however, also plan a full school day for users:

For example, a fourth grader may be pointed to Prodigy's math games, YouTube art tutorials and Khan Academy reading resources in the morning, then instructed to read a book, draw or listen to music during their screen-free lunch break. In the afternoon, they may take social studies via Google Earth, study science through Amplify and take P.E. by way of GoNoodle. The site even suggests evening activities that can be done as a family, like bedtime reading or movies to stream, among other things.[50]

While we discuss some of these commercial players in later sections, we feel it is useful to note here that there seems to be a desire to partner with commercial coalition frameworks, perhaps as a means for more direct advertising or redirection of educators and parents to the 'best' free resources. It seems obvious that a day in which students are exposed to various commercial products may allow these students, their parents and teachers to further investigate, and perhaps register for those products they find most suitable.

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49   Common Sense Media. *Wide Open School*. Common Sense Media: https://wideopenschool.org/
50   Perez, S. (2020, April 1). Wide Open School organizes free educational resources to help parents and teachers homeschool. *TechCrunch*. https://techcrunch.com/2020/03/31/wide-open-school-organizes-free-educational-resources-to-help-parents-and-teachers-homeschool/

Public-private open schools

Not every coalition we have observed is led by technology-based organisations, or obviously driven by commercial interests, such as the government-backed Oak National Academy in England.[51] Populated by resources created by a group of primary and secondary school teachers in response to Covid-19, Oak National Academy provides enough video lessons and supporting resources to meet the equivalent of three hours a day for primary school students and four hours a day for secondary. The online classroom has the support of various education organisations including Teach First, a founding partner of the global Teach for All network of employment-based teacher professional education; a number of academy trust chains of publicly-funded and privately-run schools (Harris Federation, ARK, Future Academies); a range of institutions dedicated to alternative models of teacher education and educational research (Ambition Institute, Institute for Teaching, researchED); and is financially backed by the Department for Education.

Despite its self-presentation as teacher-created, Oak National Academy is in fact headed up by staff from many of its supporting organisations, many of which have overtly reformatory aims, private sector links, and governmental connections. Its principal, for example, is a government advisor on teacher professional development and founder of the Ambition Institute. The various academy trusts involved in Oak National Academy are all part of longstanding reform efforts in England to publicly fund private bodies to run schools and displace local authority control or local governors from involvement in public education. In addition, Teach First lists Oak National Academy as a key resource supporting its response to the Covid-19 emergency.[52] Teach First approaches teacher education as a career development opportunity for business leaders rather than embedded an academic discipline, and was originally conceived by the consultancy group McKinsey and Company.

One commentator writing in the *Times Education Supplement* described Oak as the product of entrepreneurs who are on 'ministers' speed dial', 'the creation of a national curriculum template from the engine rooms of the very institutions that were gifted a dispensation not to follow the national curriculum', and a '20th-century model of learning … rolled out for the short-term but with serious implications for the future of

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51   Oak National Academy. (2020). Online Classroom. Oak National Academy. https://www.thenational.academy/online-classroom

52   Teach First. (2020). School Covid-19 resources. TF. https://www.teachfirst.org.uk/shut-in-not-shut-out/school-resources

English education policy'.[53] As such, Oak National Academy, for all its practical benefits during school closures, needs to be understood as the product of reformatory practices that have long been sought and achieved through new forms of public-private partnership in English public education. Its seed funding by the Department for Education may position it advantageously in future planning for schools during post-pandemic austerity.

Already social commentators in the UK have voiced the need for 'open schools' like the Oak National Academy to continue to exist beyond the Covid-19 crisis so that it might serve disadvantaged students and isolated communities.[54] Indeed, the UK national public broadcaster the BBC - which also launched a large range of home learning resources under its revamped BBC Bitesize initiative - has begun considering its own longer-term involvement, through partnership with other organisations, in such an 'open school'. The BBC's director general described a hybrid model of classroom-based schooling and online learning as a potential new 'public infrastructure' for education that could help address longstanding problems in state schooling while also 'growing the market for commercial providers'.[55]

These coalitions are significant because they propose new models of curriculum provision based on digital resource banks created by a variety of commercial organisations, politically-connected entrepreneurs, teacher-creators, public and charitable institutions. Together, they signify increased commercial penetration into state schooling through a mixed economy of new providers and public-private partnerships, some of which may exist only temporarily and some which have longer-term ambitions to persist as parts of new infrastructural arrangements underpinning educational transformations beyond the pandemic. The question these coalitions raise is a sociological one about their power to control the curriculum, not just during the Covid-19 crisis but beyond. Coalitions such as Oak Academy, with its extensive network of support and financial backing of the Department for Education[56], have come to the forefront as curriculum content suppliers during the pandemic, and are already being treated as potential templates for long-lasting school change

53   Diamond, C. (2020, May 15). 'Everyone must have a say in the future of education': Oak National Academy, the government-backed online teaching hub, could have a big impact. *Times Educational Supplement*. https://www.tes.com/news/coronavirus-learning-school-teaching-reopen-online-learning-oak-national-academy-future-education

54   Brighouse, T. & Moon, B. (2020, May 12). Like the Open University, we now need an Open School for the whole country. *The Guardian*. https://www.theguardian.com/education/2020/may/12/like-the-open-university-we-now-need-an-open-school-for-the-whole-country

55   Hall, T. (2020, May 30). The idea of a national Open School is an excellent one. The BBC is ready to make it happen. *The Guardian*. https://www.theguardian.com/education/2020/may/30/the-idea-of-a-national-open-school-is-an-excellent-one-the-bbc-is-ready-to-make-it-happen

56   On 22 June 2020, Oak Academy was granted funding of £4.34 million from the Department of Education to expand. See: Dickens, J. (2020). Oak Academy will create 10,000 lessons for next year with £4.34 DfE funding. *Schools Week*. https://schoolsweek.co.uk/oak-academy-will-create-10000-lessons-for-next-year-with-4-3m-dfe-funding/

processes involving the public, private and third sectors working in partnership.

4.   Intermediaries

Private sector and commercial activities in public education are frequently catalysed, financed, designed and promoted by intermediary organisations such as philanthropic foundations, think tanks and consultancies whose motivation is to participate in policy agenda-setting and reform of state-funded school sectors in education (Verger et al, 2016). In the context of Covid-19, various philanthropies, think tanks and other intermediary organisations with key interests in edtech and educational transformation have actively sought to intervene in 'reimagining' education for the future.

Philanthropy

In recent decades, private foundations have increasingly sought influence over education policy while also pursuing profit through new modes of 'venture philanthropy', 'philanthropy 3.0' or 'philanthrocapitalism' (Junemann & Olmedo, 2019). Venture philanthropy is exemplified by the Bill and Melinda Gates Foundation, which has advanced corporate interests in education reform through funding awarded to advocacy groups, nonprofit reform organisations, think tanks, and research centres (Au & Lubienski, 2016). Many new philanthropic initiatives established from the wealth of technology sector entrepreneurs have even been set up as Limited Liability Companies (LLCs) rather than private non-profit foundations, giving them enhanced freedom to invest in for-profit companies as well as to award grants, and enabling their founders to maintain strong personal control (Reiser, 2019). In addition to conventional philanthropic grant-giving, these LLCs favour 'impact investing' (otherwise known as Social Impact Bonds or Pay for Success schemes), an increasingly popular financial technique used to fund social programs that are designed to return public monies to private investors in social programs, with interest added as the 'return on investment'.[57] The Bill and Melinda Gates Foundation, for example, utilises impact investing as a core part of its strategic investments approach, often in combination with philanthropic grants.[58]

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57   Carnoy, M. & Marachi, R. (2020). Investing for 'Impact' or Investing for Profit? National Education Policy Center. http://nepc.colorado.edu/publication/social-impact-bonds

58   Bill & Melinda Gates Foundation. (2020). Our Strategy. Bill & Melinda Gates Foundation Strategic Investment Fund. https://sif.gatesfoundation.org/our-strategy/

The Gates Foundation has been especially active during the Covid-19 pandemic.[59] In April, New York State governor Andrew Cuomo announced a partnership with the Gates Foundation to 'reimagine education' beyond the pandemic, as part of a series of arrangements with technology billionaires, including former chief executive and chair of Google Eric Schmidt, to support the state's recovery and long-term transformation.[60] Together, Cuomo and Gates announced plans to build a 'smarter education system', with Cuomo arguing that the pandemic created 'a moment in history when we can actually incorporate and advance [Gates's] ideas':

'The old model of everybody goes and sits in a classroom and the teacher is in front of that classroom, and teaches that class, and you do that all across the city, all across the state, all these buildings, all these physical classrooms – why, with all the technology you have?'[61]

The Foundation subsequently announced it would be advising NY State based on insights from its 'long history of programmatic work in New York State', including from previous work with partners including New Visions for Public Schools ('a laboratory of innovation within the city's public schools') and Teaching Matters ('a national professional learning organisation dedicated to increasing teacher effectiveness'), while also considering its long-term approach to post-pandemic education.[62]

In addition to its New York partnership, the Gates Foundation has also committed $250million funding in response to the Covid-19 pandemic.[63] Within its US education programs, this includes support for high-speed broadband access for schools, policy and reform organisations, online learning and curriculum resources, virtual schooling programs, and state-level leadership advice. A guiding assumption of the Gates Foundation is that students will have experienced significant 'learning loss' during school closures, which will require rapid and transformative changes to remedy in order to ensure equitable outcomes for students.[64] One of its grants was to the

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59   Bill & Melinda Gates Foundation. (2020). Covid-19 response. Bill & Melinda Gates Foundation. http://k12education.gatesfoundation.org

60   Cuomo, A. (2020, May 5). Amid ongoing Covid-19 pandemic, Governor Cuomo announces collaboration with Gates Foundation to develop a blueprint to reimagine education in the new normal. Governor Andrew M. Cuomo. https://www.governor.ny.gov/news/amid-ongoing-covid-19-pandemic-governor-cuomo-announces-collaboration-gates-foundation-develop

61   Layne, N. & Singh, R. (2020, May 6). New York to work with Gates Foundation to 'reimagine' schools. Reuters. https://www.reuters.com/article/us-health-coronavirus-usa-new-york-idUSKBN22H29Z

62   Bill & Melinda Gates Foundation. Covid-19 updates. The Optimist. https://www.gatesfoundation.org/TheOptimist/Articles/coronavirus-interview-allan-golston-education-preparation

63   Bill & Melinda Gates Foundation. (2020). The strangest school year in memory is about to end. How do we get ready for the next one? *The Optimist*. https://www.gatesfoundation.org/TheOptimist/Articles/coronavirus-mark-suzman-funding-announcement-2

64   Bill & Melinda Gates Foundation. (2020). Schools and students during the Covid-19 outbreak in America: A conversation with Allan Golston. *The Optimist*. https://www.gatesfoundation.org/TheOptimist/Articles/coronavirus-interview-allan-golston

Foundation for Excellence in Education (ExcelinEd) to provide guidance 'to state leaders on K12 resource allocation in a post-COVID era'.[65] Founded and chaired by former state governor of Florida Jeb Bush, ExcelinEd 'emphasises a comprehensive reform agenda that, when aggressively pursued, results in a measurable, objective rise in student learning'. [66] The Gates Foundation also announced $500k funding for the UK-based Overseas Development Institute 'to consider how Edtech can mitigate the impact of COVID-19 and support equitable education access and learning' in some of the world's poorest communities, indicating its international aims to help reshape education systems.

The participation of the Gates Foundation in reimagining state education in New York State, and the prospect of longer-term and larger-scale reformatory involvement in US education raised immediate objections, many of them based on its previous education efforts – such as promoting and financing 'small schools', the Common Core State Standards, charter schools, teacher evaluations, and inBloom, a $100million data collection program that collapsed after public and media pushback related to student data privacy – which critics have long argued are detrimental to state education systems.[67] According to Kathryn Moeller and Rebecca Tarlau, the New York-Gates Foundation partnership 'reflects the power of foundations to propose technical solutions to high-stakes political debates on educational equity and quality'.[68] The efforts of wealthy 'foundations capitalising on political opportunities created by crises such as Covid-19 to assert their influence' and 'radically reshape public education without public deliberation or accountability' are, they continue, profoundly 'undemocratic' approaches that seek to 'find technical solutions to systemic inequities without addressing their underlying causes'.

Other technology philanthropies and LLCs have also committed significant grants and investment funds to support the educational response to Covid-19. Google's philanthropic vehicle Google.org, for example, committed a $10million Distance Learning Fund which included $1m for Khan Academy to provide remote learning resources in over 15 languages in order to reach over 18 million students worldwide.[69] The Emerson Collective promoted resources and best

65 Bill & Melinda Gates Foundation. (2020). Foundation for excellence in education. Grants database. https://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database/Grants/2020/04/INV-017440

66 ExcelinEd. (2020). Our Approach. ExcelinEd. https://www.excelined.org/about/approach/

67 Greene, P. (2020, May 8). Why Bill Gates is not the man to reimagine New York education. *Forbes*. https://www.forbes.com/sites/petergreene/2020/05/08/why-bill-gates-is-not-the-man-to-reimagine-new-york-education/#2445cf0f79cc

68 Moeller, K. & Tarlau, R. (2020, May 18). Gates Foundation's tactics to remake public education during pandemic are undemocratic. *The Chronicle of Philanthropy*. https://www.philanthropy.com/article/Gates-Foundations-Tactics-to/248798/

69 Shah, A. (2020, March 20). Helping education and students stay connected. Google for Education. https://www.blog.google/outreach-initiatives/education/helping-educators-and-students-stay-connected/

practices from its partner network,[70] developed the Graduate Together online graduation ceremony for US high schoolers through its XQ Super Schools program designed to 'rethink high school', and also partnered with the Wide Open School initiative initiated by Common Sense Media.[71]

Mark Zuckerberg's LLC the Chan Zuckerberg Initiative also dedicated $5million funds for Covid-19 responses in education, including awards for 'comprehensive broadband solutions' and professional development resources for remote teaching.[72] It also awarded $500k to ISTE to support its Learning Keeps Going consortium of edtech providers,[73] plus $300k to Common Sense Media to expand its Wide Open School initiative,[74] and promoted the work of its existing grantees and investees with a list of free online resources for school leaders, teachers, students and families.[75] At the same time, Schmidt Futures funded a series of articles in the EdSurge magazine dedicated to promoting 'learning engineering' as a necessary and novel approach to teaching and learning after the pandemic.[76] Eric Schmidt himself wrote an op-ed for the *Wall Street Journal* arguing that 'We should also accelerate the trend toward remote learning' in order to bypass the 'requirement of proximity, which allows students to get instruction from the best teachers, no matter what school district they reside in', and noted that Schmidt Futures was already providing philanthropic support for an 'education system based on tele-everything'.[77]

Less obviously informed by the ambitions of the tech industry itself, in te UK, the Sutton Trust has advocated for better online learning access, and actively supported the Oak National Academy 'virtual school' funded by the Department for Education to provide online resources during school closures.[78] The Trust's founder is also chair of the Education Endowment Foundation, which launched an online homeschooling curriculum

70   Emerson Collective. (2020, June 16). Resources for remote learning. Supporting Students During Covid-19. https://www.emersoncollective.com/covid19-resources-for-remote-learning/

71   XQ. (2020). Let's rethink high school together. XQ. https://xqsuperschool.org/

72   Chan Zuckerburg Initiative. (2020, April 20). Chan Zuckerburg initiative commits $5 million to Covid-19 response for educators and families. CZI Covid-19 Response. https://chanzuckerberg.com/newsroom/5-million-covid-19-response-educators-families/

73   Chan Zuckerburg Initiative. (2020, March 27). Chan Zuckerburg Initiative supports educators, students and families impacted by Covid-19. . CZI Covid-19 Response. https://chanzuckerberg.com/newsroom/chan-zuckerberg-initiative-supports-educators-students-and-families-impacted-by-covid-19/

74   Chan Zuckerburg Initiative. (2020, May 18). Chan Zuckerburg Initiative expands commitment to educators and families during the Covid-19 pandemic. CZI Covid-19 Response. https://chanzuckerberg.com/newsroom/commitment-educators-and-families-during-the-covid-19-pandemic/

75   Chan Zuckerburg Initiative (2020). *Education resources*. CZI. https://chanzuckerberg.com/covid-19/resources/education/

76   Feldstein, M. (2020, April 16). Learning engineering is learning about learning, We need that now more than ever. *EdSurge*. https://www.edsurge.com/news/2020-04-16-learning-engineering-is-learning-about-learning-we-need-that-now-more-than-ever

77   Schmidt, E. (2020, March 27). A real digital infrastructure at last. *The Wall Street Journal*. https://www.wsj.com/articles/a-real-digital-infrastructure-at-last-11585313825

78   Cullinane, C. (2020, April 21). Learning from home: Green shoots? *The Sutton Trust*. https://www.suttontrust.com/news-opinion/all-news-opinion/learning-from-home-green-shoots/

based on its own evidence digests and guidance reports.[79] The EEF also published a rapid evidence assessment on remote teaching (funded by the EdTech Hub) in order to inform teachers' planning and provision during school shutdowns.[80]

Internationally, the Qatar Foundation hosted a WISE online conference on Covid-19 responses to education with a keynote by the OECD director of education Andreas Schleicher on reimagining education systems for the future:

> *amid all the fear, panic and unknowns, new channels of innovation, creativity and systemic transformation are also accelerating at unprecedented levels. School systems have been forced to rethink traditional learning models, and rapidly build, test and pilot new structures to accommodate a completely different reality. When the dust settles, COVID-19 may present itself as a microcosm of what's to come. ... [The conference] unpacked the consequences of COVID-19 on the traditional school model, and considered how we can best optimise this time of crisis to rapidly innovate and embed system-wide change in our schools and education systems.[81]*

A further Qatar Foundation WISE article asked 'can covid19 cure education systems?', suggesting that hybrid learning models, online lesson planning and digitally enabled learning would 'upgrade our education system to address students' long-standing needs'.[82] These emphases on 'optimizing' the opportunity of the crisis, as a 'microcosm' of 'system-wide change' and 'upgrading' of education systems, reflects the solutionist assumption common in the tech-philanthropy field that complex social institutions can be fixed and transformed with the right mix of innovation, technology and entrepreneurial imagination.

These philanthropic and investment efforts, including their relationships with political leaders, government departments and policy influencers, indicate the strengthening of philanthropy aimed at enhancing and expanding the use of commercial digital technologies in education. They also illustrate the expanding power of technology philanthropists to set agendas for 'experimenting' in and 'reimagining' state education, often in ways that support both a financially and

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79 Education Endowment Fund. (2020, June 2). Covid-19 resources. EEF. https://educationendowmentfoundation. org.uk/covid-19-resources/

80 Education Endowment Fund. (2020, April 22). Remote schooling: new EEF evidence review highlights core features that can unlock its potential. EEF. https://educationendowmentfoundation.org.uk/news/eef-publishes-new-review-of-evidence-on-remote-learning/

81 Qatar Foundation. (2020). Education disrupted, education reimagined 15-16 April 2020. WISE Qatar Foundation. https://www.wise-qatar.org/education-disrupted-education-reimagined/

82 Qatar Foundation. (2020, April 21). Can Covid-19 cure our education system? WISE Qatar Foundation. https://www.wise-qatar.org/opinion-can-covid-19-cure-our-education-system/

socially beneficial return on their investments. Referring particularly to the involvement of Eric Schmidt and Bill Gates in post-pandemic planning in New York State, Naomi Klein has described the formation of a new 'pandemic shock doctrine' and a 'Screen New Deal' that is being brokered between governments and global technology firms by wealthy philanthropists.[83] New York State's experiment in reimagining education, she argues, will turn it into 'a living laboratory for a permanent—and highly profitable—no-touch future' characterised by 'human-less, contactless technologies', artificial intelligence, public-private partnerships and extensive outsourcing of government functions, such as state schooling, to Silicon Valley businesses.

Think tanks

Many think tanks have similarly projected large-scale and transformative aspirations for education technologies and other commercial involvement both during and after the Covid-19 pandemic. From the practical perspective of ensuring equitable access during school lockdowns, the UK's Institute for Public Policy Research (IPPR) proposed 'digital access funds' to provide digital devices to families.[84] The UK Education Foundation, a think tank dedicated to supporting the edtech industry, produced a report recommending 'immediate investment in digital infrastructure and digital devices to facilitate and protect learning at home' as well as 'superfast broadband for schools' to support longer-term digital approaches and edtech adoption.[85] In Scotland, the think tank Reform Scotland produced proposals for a 'virtual school' that would deliver an 'online national curriculum' for all Scottish schoolchildren, after government announcements that the new 2020-21 school year would commence with a blended model of in-school and at-home learning.[86]

The US think tank Brookings has produced a stream of reporting, analysis and thought leadership related to education during the pandemic too, including reflections on the risks and opportunities of edtech and related forms of digitally-mediated teaching and learning.[87] Brookings has, in particular, pushed insights from its work

83   Klein, N. (2020, May 9). Screen new deal: Under cover of ass death, Andrew Cuomo calls in the billionaires to build a high-tech dystopia. *The Intercept*. https://theintercept.com/2020/05/08/andrew-cuomo-eric-schmidt-coronavirus-tech-shock-doctrine/

84   Weale, S. (2020, March 31). Children must not become unseen victims of coronavirus says thinktank. *The Guardian*. https://www.theguardian.com/world/2020/mar/31/children-must-not-become-unseen-victims-of-coronavirus-says-thinktank

85   Home Learning UK (2020). Protecting learning: how educators and parents are supporting student learning during covid-19. Home Learning UK. http://www.ednfoundation.org/wp-content/uploads/Protecting-Learning-Low-Res_compressed.pdf

86   Johnston, J. (2020, May 20). Scotland needs a 'virtual school'. Reform Scotland. https://reformscotland.com/2020/05/scotland-needs-a-virtual-school-jenifer-johnston/

87   Brookings. (2020). Education plus development. Brookings. https://www.brookings.edu/blog/education-plus-development/

on experimental school reforms and innovative financing models that incentivise outcomes-based achievements, such as social impact bonds 'where investors provide up-front capital to service providers with the opportunity for a return if agreed-upon outcomes are achieved', as promising models to mitigate the impacts of the pandemic on learners, especially in underserved communities and international development contexts.[88]

The conservative Heritage Foundation produced its own Curricula Resource Initiative, a collection for both schools and families that includes a curriculum library of online resources, online resources from different school models such as charter and private schools, and a slim research collection that includes a 1955 article by Chicago School economist Milton Friedman proposing that 'educational services could be rendered by private enterprises operated for profit' rather than directly financed or provided by the state.[89] This market model of state education is one of the key features of public education reforms advocated by think tanks such as Heritage, as well as by philanthropies such as the Gates Foundation, and which have opened up state schooling systems to increasing level of commercial participation.

These brief examples indicate how prominent think tanks have sought to intervene in debates about how education systems should respond to disruptions caused by the pandemic, in ways that reflect their existing political commitments to technological transformation, market-based school reform and new financial models of educational funding and investment.

Edtech impact and evidence intermediaries

Another form of intermediary organisation includes edtech 'impact' and 'evidence' specialists and networks compiling commercial resources for schools and parents. For example, the UK EdTech Impact site acts as a 'global search engine for finding the best education technology on the market' and recently added 'home learning and COVID-19 filters' to enable teachers or parents to find appropriate resources, including more than 400 'Covid-19 freebies'.[90] Organised and 'powered by procurement specialists YPO and Innovate My School', Edtech Impact is based on '50 years' experience of vetting the education marketplace', and is supported by the think tank and investor Nesta, the ventures

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88   Gustafsson-Wright, E. (2020, May 26). Education in the time of Covid-19: Reflections from the Charcha 2020 forum. Brookings. https://www.brookings.edu/blog/education-plus-development/2020/05/26/education-in-the-time-of-covid-19-reflections-from-the-charcha-2020-forum/

89   Heritage Foundation. (2020, April 15). Curricular resource initiative: Further readings. Heritage. https://www.heritage.org/curricula-resource-initiative/research/further-readings

90   Edtech Impact (2020). Realise your potential with education technology. Edtech Impact. https://www.edtechimpact.com/

firm Emerge Education, the edtech incubator Educate, and EdTechUK, a strategic body that 'accelerates' the UK edtech sector. For yearly subscription costs of between £300 and £900 per product, edtech companies can list their products, receive 'verified reviews', and earn 'teacher choice badges' to help promote their brand. Edtech Impact is also a founding member of the Edtech Evidence Group, a recently formed alliance of edtech industry organisations and companies that encourages member organisations to collect and share 'transparent' evidence of their own products' impact.[91] Similarly, Edtech Denmark – 'a non-profit, market-driven cluster association of private and public stakeholders' – produced an 'evidence-based list' of free edtech resources for educators in the Nordic nations.[92]

Likewise, in the US the Jefferson Education Exchange is 'building a framework to help schools and districts understand which edtech tools work, where, and why', which it has begun promoting intensively during the pandemic.[93] The Jefferson Education Exchange is financially supported by the Bill and Melinda Gates Foundation, Carnegie Corporation of New York, and the Chan Zuckerberg Initiative, and is a partner of the Learning Keeps Going coalition of edtech industry providers and supporters convened by ISTE.[94] Its edtech evidence framework is known as the Edtech Genome Project, a large-scale collaboration between education technology researchers, the edtech industry, educators, entrepreneurs, philanthropic 'impact' investors, and advocates, and is due for launch late in 2020 to drive up edtech implementation.[95]

These evidence and impact groups and organisations act as new kinds of intermediaries in education systems, brokering consensus regarding the implementation and use of commercial edtech through the creation and presentation of novel forms of evidence, impact metrics, and product credentialing systems. They mediate between decision-makers in schools and private sector companies through the production of 'objective' data about 'what works', in ways that shape the edtech market towards particular vendors and suppliers. In the context of the Covid-19 crisis they have also become authoritative sources of advice on what edtech works for teachers and parents to mitigate the effects of school closures. Their influence is likely to grow and establish

91   Edtech Evidence Group. (2020). The evidenced-based approach to edtech. EEG. https://www.edtechevidence.com/
92   Edtech Denmark (2020). Edtech donations. Edtech Denmark. http://edtechdonor.dk/
93   Jefferson Education Exchange. (2020, May 14). It's urgently important that schools start reporting edtech usage numbers. Jefferson Education Exchange. http://jexuva.org/blog/blog-it%E2%80%99s-urgently-important-schools-start-reporting-edtech-usage-numbers
94   Jefferson Education Exchange. (2020). About us. Jefferson Education Exchange. http://jexuva.org/about-us
95   Jefferson Education Exchange. (2020). The edtech genome project. Jefferson Education Exchange. http://jexuva.org/edtech-genome-project

with longer-term disruptions to in-school education and potentially prolonged period of at-home learning, as they mobilise the opportunity to become gatekeepers of edtech evidence, much of it produced by their own members, and to shape the market choices of teacher and parent consumers.

5. Edtech market-makers

Over the past decade, public education has become a key site of venture capital and private equity investment. As one of the fastest-growing areas of investment, edtech is 'a paradigmatic illustration of the exponential growth of business interest in education as an investment opportunity characterised by a dramatic increase in the volume and speed of transactions' (Santori, Ball & Junemann, 2016, p. 193). The new financial markets and investment techniques catalysing edtech take different forms, including specialised non-profit investment ventures, financial advisory services offering 'market intelligence', education-exclusive private equity firms; and specialised investment funds and schemes that are designed to make long term investments in companies (Santori et al, 2016). In the context of the Covid-19 pandemic, the creation of financial markets and investment in education are exemplified by venture capital investors, edtech market intelligence agencies, and impact investors seeking to capitalise on rapidly escalating demand for technological solutions to remote teaching and learning.

The global education market intelligence consultancy HolonIQ is a specialised education financial advisory service, describing itself as 'Powering the new education economy' through 'the world's smartest source of education intelligence'.[96] During the Covid-19 pandemic, HolonIQ has sought to both catalogue and catalyse edtech market activity, by projecting estimates of effects on edtech markets in China, US, Europe, and 'emerging markets' in Latin America, southeast Asia and Africa.[97] In particular, HolonIQ highlighted that in the first three months of 2020, as Covid-related disruptions set in, US$3bn of venture capital was invested in edtech (taking the total number of edtech companies valued at over $1bn to 18 worldwide), and although it foresaw market fluctuations ahead, it also projected opportunities for edtech growth and investment:

96   HolonIQ. (2020). HolonIQ is the world's smartest source of education intelligence to power decisions that matter: HolonIQ. https://www.holoniq.com/
97   HolonIQ. (2020, May 21). Prototyping global education stock indices: experimental market cap weighted geographic and sector indices. HolonIQ. https://www.holoniq.com/notes/prototyping-global-education-stock-indices/

COVID-19 is also highlighting inequality in access to digital and remote learning solutions, especially in an environment where synchronous video and laptop-based applications have been the emergency response, more so in developed economies. Developing economies and emerging markets are more broadly seeing surging levels of mobile and internet access and overwhelming demand for stronger education to employment links. In response to the tragic and sudden circumstances COVID-19 has brought about, confounded by global inequality, access and cost issues, we expect EdTech to be a bumpy ride through the rest of 2020 but bringing an exciting opportunity to help develop a more affordable, equitable, impactful and resilient education economy.[98]

Other edtech market intelligence and financial advisory organisations include Emerge Education, GSV, Metaari and Toptal, who, like HolonIQ, strategically deploy analyses of past edtech market data and current market changes to produce catalytic projections to attract investors. For example, HolonIQ predicts over $87bn venture capital investment in education technology between 2020 and 2030.[99]

In this context, some of the most powerful organisations in education are venture capital investors and private equity firms, particularly those based in China, the US and India, which are stimulated by large-scale market predictions and by the increasingly lucrative valuations attached to individual edtech companies. In Europe too, new VC funding is becoming available to support edtech-enabled models of education. Emerge Education, a venture seed investment firm based in the UK, has actively sought to create opportunities for edtech involvement in education during the pandemic, has invested seed funds in several British edtech companies itself, and, inspired by US virtual schools such as OutSchool and Lambda, is promoting 'online challenger schools' ('learner-centred, low-cost private schools') utilising 'online learning experiences' as alternatives to state provision, for which it forecasts favourable market potential as more parents seek out long-term homeschooling opportunities for their children.[100]

The global education business Pearson has also established its own specialised investment programs to expand the edtech market and consolidate its own market position. Following the establishment of a

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98   HolonIQ. (2020, April 9). $3B global edtech venture for Q1 2020. HolonIQ. https://www.holoniq.com/notes/3b-global-edtech-venture-capital-for-q1-2020/

99   HolonIQ. (2020, January 28). $87bn+ of global edtech funding predicted through 2030. $32bn last decade. HolonIQ. https://www.holoniq.com/notes/87bn-of-global-edtech-funding-predicted-to-2030/

100 Lynn-Matern, L. (2019, December 3). Learner-centred, low cost private schools will be made possible by the growing homeschool community. Emerge Edtech Insights. https://medium.com/emerge-edtech-insights/learner-centred-low-cost-private-schools-will-be-made-possible-by-the-growing-homeschool-abe6ee18dec0

US$50million venture fund for investing in edtech companies in 2019,[101] it announced in June 2020 a new GB£350million, ten-year social bond with the net proceeds to be used exclusively to support the provision of online learning services.[102] It said 80% of the net proceeds gained from investments in the bond will be used to finance Connections Academy, Pearson's K-12 online schooling platform, thus enabling the company to grow the platform during continuing school disruptions and potentially beyond as an alternative to physical classroom-based education. As a social bond, Pearson's education bond represents a form of impact investing that will return investors a profit based on measurably beneficial outcomes of the programs it finances. The new Education Bond will be based on measures of impact derived from Pearson's own Efficacy Frameworks, the metrics by which it reports the learning outcomes of its programs:

> *Pearson will provide data on the number of learners taking each type of course (e.g. the number of learners in Connections virtual schools) as a measure of the output of the spend and as a measure of the impact of the spend we will show the percentage of learners who achieved the target level of achievement and completed the course.[103]*

Additionally, it claims investments in the bond will be targeted towards key UN sustainable development goals, thereby addressing key issues of educational access to free and equitable quality education. It is difficult to tell how the bond will play out but worth noting that it positions Pearson simultaneously as the issuer of the bond, the service provider, the evaluator of outcomes, and the payer of proceeds into its own platform products. The bond is designed to attract new sources of investment to the Pearson brand, and especially to heighten the profile of Connections Academy as a market-leading platform for private online schooling.

The Covid-19 crisis has also catalysed impact investment organisations to issue new calls for alternative models of educational financing, notably in low-income countries and international development contexts. The Education Outcomes Fund (EOF), for example, focuses on the use of 'results-based finance' to improve educational quality and outcomes in Africa and the Middle East. The EOF partners with governments in these

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101   Pearson Ventures. (2020). Supporting entrepreneurs to create the future of education. Pearson. https://www. pearson.com/news-and-research/the-future-of-education/pearson-ventures.html

102   Pearson. (2020, June 1). Pearson issues inaugural £350m education-linked social bond. Pearson. https://www. pearson.com/en-gb/news-and-research/announcements/2020/06/pearson-issues-inaugural-p350m-education-linked-social-bond.html

103   Pearson. (2020, May). Education bonds and an introduction to sustainability at Pearson. Pearson. https://www. pearson.com/content/dam/one-dot-com/one-dot-com/global/Files/investors/social-bond/Pearson-Social-Bond-Brochure_Accessible.pdf

regions to specify learning objectives to be achieved, agree data practices and metrics to be used to measure 'what works', and to mobilise impact investors to fund the up-front costs with the promise of financial returns based on 'independently verified' results: 'From a pool of public funds, aid, philanthropy, and corporate CSR contributions, we repay investors and delivering organisations their initial investment plus a return if the learning objectives are reached'.[104] During Covid-19, the EOC issued a series of proposals for investment in edtech:

> *more and better investment in EdTech is required to support building theories, evidence, dialogue and capacities; and to support innovators to design and adapt cost-effective solutions. This is the time for traditional education funders to thoughtfully partner with private sector companies and investors (commercial and impact-focused) and share the risks of appropriate innovation. So, while we scramble to deliver education in the times of COVID-19, let's not get bogged down in evidence alone. Evidence quality, dialogue between the full set of actors in the EdTech space, capacities to use evidence and more and better investment in EdTech also need our attention.[105]*

Importantly, the EOF is not simply calling for venture capital investment in products, but new models of public-private partnership and investment in the infrastructure of edtech research, evidence generation, user capacity, and theory development. One of its partners to meet these aims is the UK-based Edtech Hub, an edtech evidence group funded by the Department for International Development and the World Bank. These developments would create new ways of measuring the impact of edtech implementation over the longer-term, secure impact investment from a range of sources, and thereby help embed edtech in education systems over the longer term. Pay for results schemes, which are also popular in the field of education philanthropy, thus emphasise the collection of measurable evidence of 'what works' and stimulate investment in education from organisations seeking financial return from the arrangement. Impact investing therefore potentially puts the focus on investment in programs that can deliver quick wins and financial gains, and that can then be 'scaled up' based on evidence of what works, rather than on longer-term programs that tackle the complex structural problems faced by education systems in international development contexts.

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104   Education Outcomes Fund. (2020). Education Outcomes Fund. https://www.educationoutcomesfund.org/
105   Outhred, R. (2020). We need more than evidence to harness the potential of edtech to deliver on its promise. Education Outcomes Fund. https://www.educationoutcomesfund.org/post/we-need-more-than-evidence-to-harness-the-potential-of-edtech-to-deliver-on-its-promise

Market intelligence, venture capital, impact investing and private equity favour market-led models of education that are intended to deliver financial returns to their investors and financiers (Saltman 2019). These forms of innovative educational financial activity have become especially active during the Covid-19 crisis. The models that are being funded are 'challengers' to public education, such as online virtual schools and other products designed for use outside of the normal structures of the schools sector. Although the pandemic is the immediate context for such investments, it is clear that much longer-term returns are being sought, as exemplified by Pearson's 10-year education bonds and its plans to finance Connections Academy, and by HolonIQ's predictions about rapid growth of online learning markets over the next decade. These new forms of educational finance are actively catalysing markets and seeding and scaling up commercial edtech ventures as both short-term solutions to the pandemic and as long-term investments in public education reforms and alternative or hybrid models of schooling.

6.   Big tech companies enrolling schools

The involvement of global technology companies in education systems around the world has a long history, though it has intensified dramatically during the Covid-19 pandemic. In this section we highlight some of the key commercial technology operators that have sought to advance their products, services and platforms during the crisis. These technology companies are operating at very different levels, from their participation in high-level international coalitions (where they have positioned themselves as providers of policy solutions to school closures), to the provision of practical home-schooling and home learning resources. In these ways, technology corporations have become able to reach across education systems, exerting subtle influence at the policy level while penetrating into school systems and expanding into the learning routines of the family home at the same time. We concentrate here on three major transnational technology companies: Microsoft, Google, and Amazon, which have all sought to make major in-roads to education during the Covid-19 crisis.

Microsoft

Microsoft's long track record in education includes the provision of Office software, hardware and IT supply, cloud services, certified 'Microsoft Educator' and 'Teacher Academy' training programs for practitioners, 'Innovative teacher' awards, resources for schools

leaders, and a wide variety of tools and resources, much of it adapted to different national contexts.[106] During the pandemic, Microsoft-owned products including Minecraft Education Edition and Skype for videoconferencing calls have been actively promoted for use while schools remained closed. Microsoft also promoted its Microsoft Educator Center, a suite of professional development resources and tools designed to support teachers with distance learning,[107] including a vast catalogue of lesson plans and teaching resources making use of various Microsoft applications.[108]

At the height of the pandemic in 2020, Microsoft announced that it was rolling out a digital learning platform called the Learning Passport developed in partnership with UNICEF.[109] The platform itself was already in development but was launched early and expanded rapidly to help mitigate the effects of school closures in conflict-affected and humanitarian contexts especially. It consists of both a digital platform and a curriculum framework that was designed to map local curriculum and content in a globally comparable and systematic way in order to allow progress and outcomes to be measured and tracked with visual analytics. Learning Passport was specifically launched by UNICEF and Microsoft as a successful exemplar of public-private partnership in global education provision, as part of the Generation Unlimited global multi-sector partnership. On its launch, UNICEF claimed 'the Learning Passport is an example of how UNICEF partners with business – based on a shared-value approach, where producing social value and addressing its challenges also makes perfect business sense'. Microsoft's president added:

'Just as COVID-19's impact has no borders, its solutions must not have borders, as it requires the collaboration across public and private sectors to ensure every student stays engaged and continues learning. UNICEF's Learning Passport is uniquely positioned as a scalable learning solution to bridge the digital learning gap for millions of students to bring their classroom into their home during the pandemic.[110]

The Learning Passport platform illustrates three key trends that have coalesced particularly during the Covid-19 crisis: 1) the expansion and acceleration of public-private partnership arrangements to create

106 Microsoft Education. (2020). Microsoft in education. Microsoft. https://www.microsoft.com/en-gb/education
107 Microsoft Education. (2020). Get started with distance learning. Microsoft. https://education.microsoft.com/en-us
108 Microsoft Education. (2020). Education center resources. Microsoft. https://education.microsoft.com/en-us/resources
109 Microsoft/UNICEF. (2020). The Learning Passport. UNICEF. https://www.learningpassport.org/covid-19
110 Thompson, G. (2020, April 20). UNICEF and Microsoft launch global learning platform to help address Covid-19 education crisis. UNICEF. https://www.unicef.org/press-releases/unicef-and-microsoft-launch-global-learning-platform-help-address-covid-19-education

'solutions' to education globally; 2) increasing focus on data-intensive tracking and analytics across education systems; and 3) emphasis on international comparisons between local and national education systems and curricula as a way of assessing educational quality and outcomes.

In two additional key ways Microsoft has significantly extended its reach in education during school closures. The first is its Microsoft FastTrack program providing assistance to schools to move existing systems and data to its cloud architecture, in ways marketed as supporting schools' transitions to remote teaching and learning.[111] Through FastTrack, Microsoft is therefore seeking to secure long term integration of school systems with its cloud architecture as well as to accelerate the deployment and adoption of Office 365. Closely related to this is Microsoft's offer of free deployment of Office 365 Education in schools around the globe. Amplified by its international promotion of 365 for free to schools, Microsoft has therefore sought to expand both its key software products into public education and to integrate school IT systems and data into its cloud architecture too. Microsoft organised a Global Learning Week, a series of online presentations, workshops and tips on virtual teaching livestreamed on Facebook, as a way of preparing teachers for hybrid teaching and learning during the recovery from the crisis, thereby sharing 'best practices' and 'tips' and helping to habituate practitioners into the new modes of practice enabled by Microsoft's products.[112]

Beyond its immediate response to school closures and its long-term plans to embed technology products in public education, Microsoft has also sought to use the opportunity of the Covid-19 crisis to promote its preferred vision of the future of education. In collaboration with New Pedagogies for Deep Learning (NPDL), a global partnership organisation with long-running ties to the OECD, Gates Foundation and Pearson, Microsoft published a 'position paper on a paradigm shift for education' entitled 'Education Reimagined: The future of learning':

The fallout of COVID-19, continuing advances in digital technology, and intensifying pent-up demand for student centered learning have combined to present an unprecedented opportunity to transform education across whole systems. ... This powerful shift to a learner-centered system will be amplified by technology and

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111 Microsoft FastTrack (2020). FastTrack. Microsoft. https://www.microsoft.com/en-gb/fasttrack
112 Microsoft Education Team. (2020, June 10). Celebrate with us during global learning week this June 22-26. Microsoft. https://educationblog.microsoft.com/en-us/2020/06/celebrate-with-us-during-global-learning-week-this-june-22-26/

driven by education that is steeped in purpose and meaning. We are excited to join Microsoft to help accelerate this development.[113]

The Microsoft partnership with NPDL on the position paper is intended as a stimulus for education system leaders and school leaders to reimagine education for the future, drawing from 'the best of traditional approaches, innovative practices, and insights from remote learning to shape new, flexible, agile hybrid learning models'.[114] The key aspect of this program is that Microsoft has partnered with an organisation that already has a high level of influence, visibility and credibility in the education field, and that – in its model of 'deep learning' – is also mobilising the 'unprecedented opportunity' of the pandemic to seek to shape education systems to its preferred (and pre-existing) vision of a hybrid, agile, and highly digitalised future of education.

As these examples indicate, Microsoft is attempting to secure itself multiple roles in education during and after the pandemic: as a technical infrastructure and platform provider, as a business partner in new public-private partnerships for global education delivery, and as a key participating node in policy-influencing networks.

Google

Although it was a later entrant into the education sector than Microsoft, Google launched the G Suite of apps in 2006 (originally known as Google Apps for Education), followed by Chromebook laptops in 2011, with Google Classroom (its hub for classroom activities including attendance, classroom discussions, homework, and communication with students and parents) launching in 2014. By offering its products for free, Google has bypassed the usual procurement processes involved in edtech purchasing, and become the dominant provider of edtech hardware and software globally. Chromebooks have been used by 30 million students and educators worldwide, while the Google G Suite has reached 80 million and Classroom has over 50 million users. Through its philanthropic Google.org initiative, it has also invested over $250m in education technology interventions, including access for underserved schools and communities. In these various ways, Google has attained an extremely powerful position in education systems around the world, with reach to millions of teachers and tens of

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113   New Pedagogies for Deep Learning: A Global Partnership. (2020). Education reimagined: the future of learning. Microsoft. https://edudownloads.azureedge.net/msdownloads/Microsoft-EducationReimagined-Paper.pdf

114   Fullan, M. & Quinn, J. (2020, June 8). Reimaging education: from remote to hybrid learning. Microsoft. https://educationblog.microsoft.com/en-us/2020/06/reimagining-education-from-remote-to-hybrid-learning

millions of students through its low-cost Chromebooks hardware and the G Suite of free software apps.[115]

During the pandemic, Google launched a service called Teach from Home in partnership with UNESCO's Institute for Information Technologies in Education, as a 'temporary hub of information and tools to help teachers during the coronavirus (COVID-19) crisis'.[116] It also provides resources for distance education through Google's dedicated COVID19 Information and Resources site, and announced a 'Teacher Approved' badge to be displayed on select products in the Kids section of its Google Play app store.[117] Furthermore, Google launched Learn@Home through YouTube as a resource for families with children during school closures, with multiple channels of content provided by selected education partners including Khan Academy, BBC Bitesize, Sesame Street, the Wide Open School initiative, code.org, and Google itself.[118]

As its main offer, Teach from Home actually consists of the standard Google G Suite of apps for education, including Classroom, Drive, Docs, Hangouts, Groups, as well as the additional integration of the Teams videoconferencing application. The Teach from Home 'temporary hub' requires whole schools to subscribe to G Suite for Education and create Google accounts for students, thereby further expanding Google's user base amongst students and opening up new opportunities for data extraction.[119] Classroom, in particular, experienced a surge in demand as schools worldwide sought digital learning platforms to host remote teaching. The app itself includes the capacity for integration with other third-party apps, of which hundreds are available, which therefore opens up any subscribing schools to a vast array of interoperable products. This potentially enables Google to extract valuable information from the customer usage data across this emerging and expanding ecosystem of plug-and-play products and companies.

The expansion of G Suite and Classroom rekindles long-standing questions and controversies over Google extractive strategy and privacy practices. In 2017 the Electronic Frontier Foundation formally complained to the US Federal Trade Commission that, through Chromebooks and G Suite, Google was involved in 'unauthorised collection, maintenance, use and sharing of student personal

115   Kessler, E. (2020, May 14). 10 things to know to get started with Google Classroom. Google. https://www.blog.google/outreach-initiatives/education/classroom-distance-learning/
116   Google Teach from Home. (2020). Teach from home. Google. https://teachfromhome.google/intl/en/
117   Brooks, M. (2020, April 15). Find high-quality apps for kids on Google Play. Google. https://www.blog.google/products/google-play/teacher-approved-apps/
118   YouTube Learning. (2020). Learn at home with YouTube. YouTube. https://learnathome.withyoutube.com/
119   Google. (2020). Distance learning resources. Google. https://www.blog.google/outreach-initiatives/education/classroom-distance-learning/

information beyond what is needed for education'.[120] One of the significant claims against Google is that its customer-oriented policy documents 'disguise the business model' and 'persuade the reader to understand Google as a free public service, divorced from marketplace contexts and concerns' (Lindh and Nolin 2016, p. 650). A study of various platforms used for 'emergency remote teaching' during the Covid-19 pandemic found that G Suite performed worst in relation to data protection regulations in Europe.[121] While Google does not sell student data collected from G Suite or Classroom specifically for third-party advertising, this does not prevent it utilising personal information for the purposes of value-creating product development. Moreover, Google pursues brand allegiance and familiarisation, hoping the tens of millions of teachers and students who become familiar with Google products at school will continue to rely on Google out of school, thus generating the data from which Google derives most of its revenue. In this sense, the free to use G Suite has been described as training 'Google consumers from infancy', and as a 'brand loyalty scheme, presented as an education revolution.'[122]

Amazon

Amazon's first notable entry into education was the provision of cloud storage for schools through its Amazon Web Services. However, it has subsequently made a number of education-related developments, including a marketplace where teachers can share or sell home-produced lesson plans and resources, Prime subscriptions for students, grants for education projects, an EdStart incubator for edtech companies, Business for Education deals for quantity discounts, school Prime accounts, AWS Educate resources to 'accelerate cloud-related learning', and an LMS Integrated Store enabling educators to build course content and students to select the format that 'fits their budget and study preferences'.[123]

During the pandemic Amazon produced guidance and resources for educators on remote instruction,[124] promoted the digital learning platform EVERFI, of which Amazon founder Jeff Bezos is a major

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120　Electronic Frontier Foundation. (2015). EFF v. Google, inc. EFF. https://www.eff.org/files/2015/12/01/ftccomplaint-googleforeducation.pdf

121　Ducato, R. et al. (2020, June 4). Emergency remote learning: a study of copyright and data protection policies of popular online services. Kluwer Copyright Blog. http://copyrightblog.kluweriplaw.com/2020/06/04/emergency-remote-teaching-a-study-of-copyright-and-data-protection-policies-of-popular-online-services-part-ii/?doing_wp_cron=1591282019.5066540241241455078125

122　Krein, A. (2020, June). The screens that ate school. The Monthly. https://www.themonthly.com.au/issue/2020/june/1590933600/anna-krien/screens-ate-school

123　Amazon Education. (2020). Products and services. Amazon. https://www.amazon.com/gp/feature.html?ie=UTF8&docId=1000412651

124　AWS Educate. (2020). Supporting the rapid transition to remote learning. Amazon. https://aws.amazon.com/education/remote-instruction-resources-for-educators/

investor, and provided millions of dollars of Amazon devices to schools in the US.[125] Through the AWS Educate program and its AWS Educate Cloud Ambassador Program - a program for leading 'cloud educators who serve as ambassadors and evangelists for AWS Educate' - Amazon 'created an Educator Mobilisation initiative, which leverages its vast network of educators with experience teaching online' to provide guidance and support on remote teaching.[126] Notably, too, Amazon promoted its Alexa for Education API, which enables its voice technology to be integrated into other edtech products[127] (the first application was the Pearson platform Revel), partly through an 'EdTech Challenge' competition that invited proposals on innovative integrations of Alexa in educational technology applications.[128]

As with the expansion of Google and Microsoft during the pandemic, the efforts of Amazon to extend use of its services in education in this period raises significant issues regarding data sharing, storage and ownership. For example, 'Using the AWS Cloud, schools and districts can get a comprehensive picture of student performance by connecting products and services so they seamlessly share data across platforms'.[129] It also strongly promotes its 'Machine Learning for Education' services to 'identify at-risk students and target interventions', 'improve teacher efficiency and impact with personalised content and AI-enabled teaching assistants and tutors', and 'improve efficiency of assessments and grading'.[130] As such, AWS provides cloud-based education infrastructure for not just solving schools' IT infrastructure issues, but for compiling student data and enabling its analysis within the Amazon ecosystem of products and services, and for applying automated machine learning processes. Amazon's overall business strategy is to act as an 'infrastructure provider' seeking 'structural dominance' across a wide range of industries, from commerce and entertainment to computing and data analytics power.[131] Now, it seems, Amazon is competing with Google and Microsoft for structural dominance in education too, with the Covid-19 crisis as an opportunity to market and promote its range of cloud computing, machine learning, and voice technologies to schools.

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125 Day One Staff. (2020, June 17). Amazon's Covid-19 blog: daily updates on how we're responding to the crisis. Amazon. https://blog.aboutamazon.com/company-news/amazons-actions-to-help-employees-communities-and-customers-affected-by-covid-19/

126 Day One Staff. (2020, April 1). Supporting teachers' transition to learning with no-cost resources. Amazon. https://blog.aboutamazon.com/company-news/supporting-teachers-transition-to-remote-learning-with-no-cost-resources

127 AWS (2020). Alexa in Education. Amazon. https://aws.amazon.com/education/alexa-edu/

128 AWS. (2020). Amazon Alexa EdTech Skills Challenge. Amazon. https://aws.amazon.com/education/alexa-edu/edtech-challenge/

129 AWS. (2020). K12 and Primary Education. Amazon. https://aws.amazon.com/education/K12-primary-ed/

130 AWS. (2020). Machine learning in education. Amazon. https://aws.amazon.com/education/ml-in-education/

131 Khan, L. (2017). Amazon's antitrust paradox. *The Yale Law Journal*. https://www.yalelawjournal.org/pdf/e.710.Khan.805_zuvfyyeh.pdf

Microsoft, Amazon and Google have been selected here owing to the very large range of educational resources and products they have sought to promote during school closures, but other international technology companies have also stepped up to provide free resources. Apple has supported a range of resources for home learning, primarily focused on apps to foster creativity and coding skills, as well as promoting its own built-in apps.[132] The videoconferencing platform Zoom was offered for free for schools,[133] along with a selection of resources to support educators to make use of the platform,[134] although serious controversy emerged over its data collection and privacy practices,[135] including reports of racist 'zoombombing' of online lectures.[136]

Google, Microsoft, Amazon, as well as other technology companies, are enrolling schools at huge scale into their infrastructures and enlisting educators' increased use of their products and services. New entrants into the 'education market' continue to emerge, such as the social media platform TikTok announcing in June 2020 it was partnering with hundreds of universities, experts and charities to create educational content for the platform after recording millions of views of content on the #LearnOnTikTok hashtag during the pandemic:

> *'Going forward, LearnOnTikTok is about us investing in partners and content creators with a breadth of professional content... We think this is about applying the power of TikTok to learning: the effects, the audio, the transitions, the tools that make it so engaging and fun, to make people enjoy learning.'* [137]

Under the leadership of a new chief executive from Disney, who oversaw the launch of its Disney+ streaming service, TikTok is anticipated to build content creation partnerships to deliver high-quality 'micro-learning' videos through the platform. These plans to position TikTok as an educational platform pre-existed the pandemic, as it sought out new customers and fresh sources of revenue, but were fast-tracked in response to users' own creation of educational content during the Covid-19 emergency. It is simultaneously investing GB£15million into the initiative in Europe and another US$50m in the US, with the specific hope that 'educational content makes us more appealing to advertisers'.[138]

132 Apple. (2020). Teach and learn. From any distance. Apple. https://www.apple.com/uk/education/k12/learning-from-home/
133 Zoom. (2020). Zoom for education. Zoom. https://zoom.us/education
134 Zoom (2020). Education over Zoom. Zoom. https://zoom.us/docs/en-us/covid19.html#education
135 Cox, J. (2020, March 28). Zoom removes codes that sends data to Facebook. Vice. https://www.vice.com/en_us/article/z3b745/zoom-removes-code-that-sends-data-to-facebook
136 LaBennett, O. (2020, March 31). Zoombombing university lectures brings racism home. Black Perspectives. https://www.aaihs.org/zoombombing-university-lectures-brings-racism-home/
137 BBC. (2020, 18 June). TikTok makes move into education market. BBC. https://www.bbc.co.uk/news/technology-53079625
138 Joseph, S. (2020, 18 June). 'A shift towards maturity': Why TikTok is investing $15m in short-form educational content in Europe. DigiDay. https://digiday.com/media/a-shift-towards-maturity-why-tiktok-is-investing-15m-in-short-form-educational-content-in-europe/

These companies are not conventionally parts of the 'global education industry', and education comprises only a small part of their business operations. They are, however, increasingly operating at huge scale in education systems around the world, often through digital platforms and infrastructures that are offered to schools for free or at low-cost, and that are also extremely extensible, interoperable and able to be integrated together. Some, like TikTok, are capitalising on students' uses of their services for out-of-school learning – and the potential advertising revenue this will generate – and seeking to expand the ways that partner-created educational content is accessed online via commercial platforms. Within the schools sector, Google, Microsoft and Amazon, in particular, are shifting schools to cloud infrastructures and to ecosystems of apps and products that can be plugged together and integrated with third-party products and services. These integrative infrastructures are opening up unprecedented opportunities for technology companies to amass education data at international scope and huge volume, with limited transparency about how those data will be used. Finally, these technology companies are treating public education as a competitive market where each is seeking structural dominance through the large-scale enrolment of school customers and the integration of schools' critical information systems into their infrastructures.

7.   The edu-business sector

This section focuses on education businesses, from international edu-businesses such as Pearson through to single offering edtech startups. In the former sections of this document we have been able to highlight some of the major international corporations, philanthropists and coalitions that have turned their attention to manufacturing continued learning solutions to Covid-19. The sheer scale of what is happening on the edu-business level is harder to capture and trace. We have identified countless products and services that are competing with each other to offer edtech services. In an attempt to provide some oversight of what is happening we have organised our discussion into five subcategories of products and services, including: 1) online school platforms; 2) school and learning management platforms; 3) AI-based technologies; 4) student-monitoring and safeguarding; and 5) online learning resources.

Online schooling platforms

Online schooling is a term used to capture a number of services, including the rapidly rising number of online public charter schools

and for-profit private schools (Miron & Gulosino, 2016). These schools deliver all teaching and learning instruction through virtual means (Saultz & Fusarelli, 2017). For example, Pearson's Connections Academy, offers tuition-free virtual schooling for K-12 students, and during 2018, served more than 70,000 students across 27 states in the US. As their webpage currently states,

Right now, millions of families are trying online learning for the first time due to the ongoing COVID-19 pandemic. We see you making the most of being at home—doing great things for your kids. For the past 20 years, Connections Academy has helped students make the transition to online school. We know this probably wasn't in your plan, but know that you can do this. We're here to share our expertise and the resources you need to succeed with online school. Together, we're focused on keeping kids learning as we adjust to our changing world.[139]

Interestingly, in Pearson's 2017 annual report, it was noted that there was a need to capitalise further on the virtual schooling market, given it only made up 6% of their current sales (£274m), but was a market worth $1.5 billion. Indeed, when we consider that Pearson is offering free subscriptions for primary and secondary schools to Active Learn,[140] an online learning world with everything a teacher needs including literacy and numeracy resources, planning tools, games, activities and assessment'[141] we might extrapolate that these resources being offered in support, might turn into longer-term subscriptions and enrollments. Learning Hub is another one of Pearson's digital learning platforms, in which it provides 'bite-sized and mobile-optimised learning content' for learners in 'schools and colleges, at work, at home or on the go'.[142] While initially targeted at apprenticeship learning, it has now expanded to schooling, currently showcasing their Sport+ plugin to support school-based BTEC qualifications. The company also compiled a range of resources to support distance learning,[143] and launched a support site for parents, including extensive homeschooling curricula, resources and timetables.[144]

139 Connection Academy. (2020). Support for parents and teachers shifting to online school. Pearson. https://www.connectionsacademy.com/tips

140 ActiveLearn (2020). ActiveLearn. Pearson. https://www.activelearnprimary.co.uk/login?c=0

141 Bristow, R. (2020). Educators. Pearson. https://www.pearson.com/uk/educators.html

142 Pearson. (2020). Learning Hub. Pearson. https://www.pearson.com/uk/educators/schools/learning-hub.html

143 Pearson. (2020). Distance learning support. Pearson. https://www.pearson.com/uk/educators/schools/update-for-schools/distance-learning-support.html

144 Pearson. (2020). Support for parents and learners during coronavirus. Pearson. https://www.pearson.com/uk/learners.html

Similarly, K12[145], BYJU'S[146] and Outschool[147] are offering limited time free classes to ensure students have school closure alternatives during the Covid-19 crisis. For example, Outschool suggests they are making $1 million worth of classes available for free to families impacted by school closures and financial hardship. Interestingly, when a family signs up for this program they must register for classes, enter their credit card details and they're charged $1 to confirm their intention and identity. This $1 is later refunded if attendance in the initial class is confirmed. Again, we note the potential business plan sitting behind this strategy of collecting personal information for marketing purposes, and the possibility of upscaling subscription plans when the 'free-trial' period ends. While Khan Academy is slightly different to other online schooling providers given it has always been a free-to-use platform, it is still using the current situation to drive up donations. Currently, on entering the site, users encounter a popup that asks for a $10 donation to 'make a big difference' for a 'nonprofit that relies on support' to meet the demand 'spike' caused by Covid-19[148].

School and learning management platforms

School and learning management platforms allow educators to maintain control of student learning, but provide a platform to transition from physical to online spaces. Many of the businesses offering these services advertise their ability to work alongside (rather than replace) traditional face-to-face schooling. Since Covid-19 forced school closures, the uptake in these services has skyrocketed. For example, statistics published by Moodle suggest that during March 2020, 50,000 new Moodle sites have been registered and there are now 1.67 million learners active on the Moodle cloud (compared to 453,000 at the same time last year)[149]. Providers are actively promoting this rapid upscaling of their product, offering extended use to current customers (e.g. the upgrading of services for no extra cost), and allowing new customers to get started either for free or delayed billing - as is the case for Schoology[150] and Kinteract[151] that have both decided new customers will not pay for its services until July 2020. It is unclear whether these companies are likely to extend their free use period

145   K12. (2020). Coronavirus school closing solutions and alternatives – we're here to help. K12.
      https://www.k12.com/content/k12-refresh/en/coronavirus
146   BYJU'S. (2020). How does BYJU's #LearnFromHome work? BYJU's. https://byjus.com/free-live-classes/
147   Outschool. (2020). Free classes for families affected by U.S. public school closures. Outschool.
      https://outschool.com/2020-school-closures-offer#abkaqq71qq
148   Khan Academy. (2020). Help us do more. Khan Academy. https://www.khanacademy.org/donate
149   Pilarek, K.. (2020, May 19). Moodle in numbers during Covid-19. Moodle.
      https://moodle.com/news/moodle-in-numbers-during-covid-19/
150   Schoology. (2020). Distance learning assistance. Schoology. https://www.schoology.com/prepare/get-schoology
151   Kinteract. (2020). Capture, assign, report and share. Kinteract. https://www.kinteract.co.uk

if school closures persist to July and beyond, and equally, whether schools have the option to opt out of these services prior to their subscription shifting to a billing cycle.

AI-based technologies

AI in education has been promoted by the edtech industry as having the ability to truly personalise learning through embedded data analytics. With schools closed and teachers working remotely, there is a sense that Covid-19 is presenting an opportune time for some businesses to push their products onto parents looking for 'hands-off' schooling from home solutions. For example, Century is offering free English, maths and science courses during school closures to parents and guardians who sign up to the service. This package replaces the 'family licence' that is usually £18.99 per month[152]. As stated in the terms and conditions of using this service, the intended products are for wholly personal use and cannot be used by professional tutors or groups (e.g. schools). Similarly, Google has launched a new kid-focused voice assistant, Diya, which is designed to teach children how to read and aimed directly at parents[153]. There is a sense here that online tutoring services marketed directly at parents and guardians might replace face-to-face tutoring once Covid-19 ends.

Student monitoring and safeguarding

During the pandemic there has also been a push towards adopting digital surveillance safeguarding of students, particularly in the absence of the natural monitoring that usually occurs in schools. For example, Gaggle Safety Management for Microsoft Teams is a combination of 'machine learning and human safety experts that review students' communication and use of online tools'. School officials are alerted when students show signs of 'self-harm, depression, thoughts of suicide, substance abuse, cyberbulling, unhealthy relationships and credible threats of violence against others'[154]. This pervasive monitoring is claimed to have saved countless students from self-harm[155]. Other services like Impero target health tracking, with new plugins specifically designed to report Covid-19 symptoms of students to a school administration team, and also flag signs of home abuse or potential

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152   Century. (2020). How we are helping. Century. https://www.century.tech/explore-century/parents/#how-we-are-helping

153   Schwartz, E. (2020, May 8). Google launches new voice assistance and app to teach kids to read. *Voicebot.ai*. https://voicebot.ai/2020/05/08/google-launches-new-voice-assistant-and-app-to-teach-kids-to-read/

154   Gaggle. (2020). Gaggle Safety Management for Google Teams. Gaggle. https://news.gaggle.net/microsoft-teams-integration

155   Beckett, L. (2019, October 22). Under digital surveillance: how American schools spy on millions of kids. *The Guardian*. https://www.theguardian.com/world/2019/oct/22/school-student-surveillance-bark-gaggle

suicide[156]. These services were used by schools before Covid-19, but there has been a remarkable increase in student monitoring. As Gaggle founder and CEO, Jeff Patterson claims, their customer base has increased 1,200% since the start of school closures on the basis that schools can continue to protect students now schooling from home.[157]

Closely related to these safeguarding technologies is a resurgence of digital resources to support students' 'social-emotional learning' (SEL), especially to address any psychological problems or vulnerabilities emerging during the period of school closures and lockdown. The US-based and Gates Foundation-funded Collaborative on Academic, Social and Emotional Learning (CASEL), for example, has compiled a significant body of guidance and resources for schools to use both during closures and afterwards when students return to the classroom, as part of its long-term campaign to enhance SEL measurement, embed SEL in curricula, and improve SEL-based practices in schools.[158] Educational technologies targeted at measuring and improving SEL have been promoted extensively during the pandemic. For instance, Panorama Education, a dedicated digital data platform for use by schools to collect and analyse information about students' social-emotional learning, developed a range of new survey tools and analytics for schools to assess students at a distance and deliver targeted support.[159] Finally, as part of UNESCO's commitment to supporting SEL internationally, the UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainability launched a dedicated website of recommended digital resources and apps to promote student's social-emotional learning, many of them commercially produced.[160] It seems to us likely that schools and education systems will focus increasingly on SEL and student safeguarding as schools begin the process of reopening, delivering hybrid teaching programs, and dealing with negative personal outcomes of school closures and lockdowns. Although safeguarding and SEL-based technologies were already becoming more widespread as part of global policy interest in measuring and improving the non-academic aspects of student learning and development, Covid-19 may be seen as a catalytic opportunity to embed such technologies and associated practices in schools at much greater scale as disruptions to schooling and students' lives continue in the aftermath of the pandemic.

156   Impero. (2020). Getting free safeguarding software and health tracking tolos into the hands of schools quickly and easily. Impero. https://www.imperosoftware.com/uk/impero-backdrop/
157   PR Web. (2020, April 22). Gaggle partners with districts nationwide to increase student safety while learning remotely. PR Web. https://www.prweb.com/releases/gaggle_partners_with_districts_nationwide_to_increase_student_safety_while_learning_remotely/prweb17068912.htm
158   CASEL. (2020). Covid resources. CASEL. https://casel.org/covid-resources/
159   Panorama Education. (2020). Take action on students, staff and family needs during school closures. Panorama. https://www.panoramaed.com/distance-learning-surveys
160   UNESCO MGIEP. (2020). Essential SEL Resources: COVID-19. UNESCO MGIEP. https://mgiep.unesco.org/covid

Online learning resources

The last category we have identified here is an attempt to capture the huge amount of learning resources that are being offered for free or heavily discounted rates during the pandemic. Previous research has identified how many of these products and services are used to complement day-to-day teaching and learning practices in schools, including: online textbooks, mathematics and literacy gamification programs, coding software, quiz and assessment hosting, digital communication tools, and various virtual reality experiences, like science laboratory activities or field trips. Perhaps most interesting here is the large number of commercial gaming products that have been able to quickly shift and upscale to meet educational demands. For example, Roblox, a platform that has over 100 million active users - and valued at $4 billion dollars - has released 'Learn & Explore' for families and educators wanting to explore learning game development[161]. As a Roblox spokesperson cited in the Washington Post argues, this move was already on the 'road map' but was fast tracked when the pandemic emerged[162].

Across many of the products we reviewed, key business strategies included connecting with educators (both teachers and parents) through webinars, offering free trials, planning ready-to-go curriculum-linked lessons and showing how engaged students are in their products through customer testimonials. Regardless of the product it seemed clear to us that, unlike most businesses experiencing a downturn due to Covid-19, edu-business was largely booming. The question remains to what extent this uplift in use will translate to edu-business profits after free trial periods end and the pandemic passes?

161   Baszucki, D. (2020, March 20). Staying connected: our response to Covid-19. Roblox. https://blog.roblox.com/2020/03/staying-connected-response-covid-19/

162   Favis, E. (2020, April 16). With coronavirus closing schools, here's how video games are helping teachers. *The Washington Post*. https://www.washingtonpost.com/video-games/2020/04/15/teachers-video-games-coronavirus-education-remote-learning/

III. Key issues, research priorities, and recommendations

1. Global education industry expansion during the emergency

In this report we have captured activities that indicate some ways in which privatisation and commercialisation of education are being accelerated and extended in the context of the Covid-19 pandemic, with a particular focus on education technology. Some of these developments will have been experienced first-hand by educators and students, as they have transitioned to digital platforms and services for online education. Much of the activity to expand educational technology during school closures has been clearly motivated by the necessity of ensuring educational continuity for many millions of students. However, our attention in this report has been drawn to activities that extend far beyond the immediate requirement of equipping teachers and students to be able to continue schooling in the absence of school buildings or physical proximity. Instead, we have documented longer-term aims and ambitions from a wide range of organisations and private, public and third sector positions, many of which seem to indicate that the period of the pandemic will be pivotal in large-scale changes to public education systems that may considerably advantage and benefit commercial technology-centred organisations.

Although a global education industry that conceives of education as a globalised sector to be managed by private actors and organisations, rather than left to the state alone, is not a new development (Verger et al 2016), it has amplified its influence and the scale of its penetration into education systems considerably during the global Covid-19 emergency. As part of this, we see evidence both of privatisation being done to public education at the structural level, through state-supported private sector participation in schooling, and of commercialisation occurring through the penetration of profitable goods and services into schooling processes and practices (Hogan & Thompson 2017). Many of the actors and organisations we have identified in this report view the current emergency of school closures not just as a short term opportunity for providing charitable support to educators, students and parents,

but as a long term opening for expanding their business interests, generating revenue, gathering data, shaping teaching practices, and influencing policy agendas into the future. The global education industry has continued and considerably accelerated its expansion during the Covid-19 emergency, with long term consequences that so far remain unclear but have the potential to exert significant effects on education systems around the world. These developments remain in motion, and their evolution will require much more sustained study in order to understand their repercussions and consequences over the longer term. It is still too soon to tell what the post-pandemic landscape of public education will look like. We offer the following key issues as tentative conclusions, as indicators of unfolding dynamics, and as launchpads for such longitudinal work.

2.   Global and national, public and private policy networks

Commercial organisations have played a considerable role in education during school closures, but this cannot be interpreted straightforwardly as commercialisation of state education. Instead, organisations from multiple sectoral positions and national perspectives have coalesced around shared aims and aspirations which, in a highly compressed period, have become the core of an international policy agenda in which commercial edtech is a major component. Beyond the work of commercial companies and the private sector alone, the pandemic has been treated as a catalytic context for new forms of networked, cross-sector and cross-border forms of education policy. These policy dynamics operate at global, national and regional scales, involving a mixture of international multilateral organisations, global technology and education businesses, philanthropic grant funding and investor schemes, national and subnational government departments, public bodies and civil society organisations, as well as more 'local' edtech businesses and associations working in different countries. In this sense, we can see the distributed forms of policy activity documented in this report as a particularly accelerated and networked instance of 'fast policy' or 'policy mobility', where state centres of policymaking are fused to the activities of private organisations, business practices, venture philanthropy and capital markets (Peck & Theodore 2015).

At transnational scale, the reformatory aspirations of organisations with global scope and influence, such as UNESCO, the OECD, World Bank, Pearson, Gates Foundation, Microsoft and Google, have translated into 1) short-term emergency responses to the pandemic and 2) long-term

reforms enabling education systems to recover from the pandemic in transformed and more effective forms. Although regional and national government departments of education have been active in promoting digital solutions to school closures, they have often lagged behind the leadership of these organisations. The UK's Department for Education is a case in point, as it only announced funding for devices, financial backing for Microsoft and Google products, and a grant to the Oak National Academy in early April 2020, weeks after major coalitions were announced by UNESCO, ISTE and other non-governmental organisations. As such, the educational response to the pandemic was characterised by existing trends towards dispersed policy networks, and exemplifies the agility of multilateral organisations and commercial companies to develop new kinds of partnership arrangements to address policy problems in near to 'real time' rather than at a delay. However, this disruption of conventional policy approaches also means that policy agendas are being developed and led by actors with their own idiosyncratic views of the purposes of public education and of how education systems should be arranged and managed. In other words, new forms of public-private governance of education, operating at variously national and international scales, have come to the foreground during the pandemic.

3. Experimental pandemic prototyping for future education systems

New imaginaries of education futures circulated by commercial organisations and supported by like-minded advocacy networks are proposing a radical 'reimagining' and prototyping of education systems. The mass closure of schools globally has been touted as the biggest edtech experiment in history or as a microcosm for education in the future, and while the edtech industry is cautiously optimistic about what the future of schooling might look like after the pandemic ends, it's difficult to imagine that edtech won't play a more central role moving forward.

While some schools might continue to use management platforms to organise teaching and learning activities, more interesting are the proposals emanating from governments that some of the hastily adopted online schools - like Britain's Oak National Academy - are here to stay, embedded in 'hybrid' school models and embodied in teachers' practices through the period of pandemic recovery and beyond. This is a clear example of the move towards privatisation in public schooling, where governments work in partnership with private (both commercial

and philanthropic) actors to deliver core public services. While these moves are ostensibly about catering to disadvantaged students, we echo arguments made previously that such provision of schooling is likely to increase inequity, rather than reduce it (Sellar & Hogan, 2019). Online schools might be a cost-effective way to educate masses of students, but are likely to undermine the social purposes of schooling and the ethical obligation societies have to the health and wellbeing of their young people.

4.   New private infrastructures of education

A key way that private sector education businesses and global technology companies have expanded and intensified their commercial agendas in public education is through the provision of digital infrastructure for online teaching and learning (e.g. MS365, G Suite, AWS Cloud). This has consolidated the market share of key private infrastructure providers. For example, in the UK, government support for Microsoft and Google has potentially restricted the market of online learning platform providers, by incentivising schools to opt for platforms that are both free to use and bundled up with government-funded technical assistance. To a significant extent, government investment in Microsoft and Google has seen these companies come to dominate the area of school IT infrastructure. Similarly, in China the state has invested significantly in AI-based edtech during the pandemic, as part of an escalation of its longstanding ambition to create an innovative education system that will enhance China's long-term geopolitical strengths in AI development and deployment (Knox 2020). The involvement of technology companies in national and international coalitions, such as those led by UNESCO and ISTE, is assisting them to expand their infrastructure business to new geographical spaces, particular in underserved or developing contexts.

We can understand infrastructure in a slightly different way, as constituting a shift from the infrastructure of physical classrooms to increasingly online, blended or hybrid systems of education enabled by digital infrastructure. Even when schools re-open, many will have new agreements in place - including hastily agreed consent from parents - for technology companies and edtech vendors to provide services and resources. These efforts are part of a larger project to reimagine the infrastructure of public education, in particular by stretching edtech products and services across existing schooling systems as a vital new substratum of pedagogy, management and curriculum provision. For example, Dan Cohen argues that various market reformers and edtech

companies that have promoted online learning are now capitalising on the crisis and investment enthusiasm to push online education ever further into post-pandemic public education.[163] A 'new education infrastructure is emerging', Cohen argues, supported by reformatory actors that aim 'to use edtech to create a privatised education system that can unlock profits for corporations and investors and find any avenue to cut costs to maximise gains'. Such reformatory objectives appear to underline the involvement of the Gates Foundation in 'reimagining' education in New York. Discussions about creating a new digital infrastructure for schools are also ongoing at such diverse organisations as the public broadcaster the BBC, the OECD, and UNESCO, in invesment organisations, as well as in the many national or regional departments of education that have supported new infrastructural arrangements for schools. What we can observe here is not necessarily a coordinated commercial effort to re-infrastructure public education through private sector technology, but a loosely aligned set of ad hoc activities that, over coming months, may become increasingly influential in setting agendas for technical change at regional, national or even international scales.

5.   Pandemic profit-making

The global education industry has advanced the idea of education as a sector for investment and profit making and management by private organisations. In particular, commercial edtech businesses have profited from venture capital investment and rapidly escalating customer demand (Williamson, 2017). As previous research by Lingard and colleagues (2017) found, many schools rely on commercial edtech products, as state departments neither have the expertise or capacity to manage in-house development of the services now required to administer and run schools. Much research has reflected how the commercial edtech industry has been able to make considerable inroads into 'privatising' schooling. Yet, over the course of the Covid-19 pandemic we have seen the rapid growth of new market opportunities alongside investor enthusiasm and proposals for increased spending through 'pay for results', 'impacting investing' or 'social bond' schemes. For example, exam proctoring and AI-based home tutoring have suddenly emerged as key to the success of online learning from home. These products have been developed, trialled and were waiting for their opportunity to be taken up on a larger scale. One way to exemplify this further is to imagine the changes that might

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163   Cohen, D. (2020, April 16). Who will control post-covid online k-12: the perils of rushing into a market-led future. Critical Geographies of Education. http://www.critgeoed.com/blog/who-will-control-the-future-of-online-k-12-the-perils-of-rushing-into-market-led-infrastructure

occur to the shadow education industry moving forward. Traditionally, parents have enrolled their children in out-of-school tutoring centres or organised private sessions, often for a considerable cost (Bray & Lykins, 2012). The shift towards an online subscription with a personalised AI tutor, is more cost effective, and a more convenient way to provide extra support for student learning.

It is clear from our mapping exercise that the edtech industry is banking on future profitability. While many businesses are offering their products and services for free during the pandemic, their operating costs are actually increasing. As explained by Khan Academy CEO, they've seen usage of their platform increase three times the normal 18 million visits per month, and users are spending twice as long on the site. This means that Khan Academy's server costs would jump from $7 million to $20 million per year to meet the growing demand. The business plan adopted by the edtech industry is summarised as 'support now, sell later', where businesses are expanding their services now in the hope they might lock schools and parents into long term subscriptions once the pandemic ends.[164] However, this plan is uncertain, as while usage of free edtech products and services has grown dramatically, there has been a decrease in the use of paid offerings. The long-term 'cost' of free access needs to be tracked into the future to understand whether schools were the short term beneficiaries of edtech social responsibility, or whether the edtech industry was able to capitalise on the dramatic growth of paid subscriptions.

6.   Digital and data risks

A range of potential risks associated with digital technologies and the collection of student data emerge from the proliferation of edtech during the pandemic.

Expanding the role of AI in education. With schools closed, AI has been presented as an alternative mode of education – as an automated educator that can act in the absence of the classroom teacher. However, introducing AI into education raises a number of key issues. These include: the narrowing of education goals, privileging certain types of knowledge and information over others, such as subjects that can be easily tracked and translated into data; the use of AI for guiding students towards the skills valued by edtech producers risks framing education through market logics; and the automation of decision-making which

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164   Wan, T. (2020, April 7). Traffic is booming for online education providers. But so are costs. EdSurge. https://www.edsurge.com/news/2020-04-07-traffic-is-booming-for-online-education-providers-but-so-are-costs

could produce discriminatory outcomes as the result of biased training data.[165] Moreover, AI in education is framed by discourses of personalised learning that are highly contested. Although personalised learning has a long history in educational philosophy, its contemporary meaning is inflected by particular understandings of learning as the individualised pursuit of 'mastery' enacted primarily through adaptive software rather than in interpersonal dialogue and relations with others.

Buggy software. Amplifying the use of new technologies in education poses the risk that students and teachers may be exposed to 'buggy' or faulty software. In one notable example during the Covid-19 crisis, an online assessment application failed to upload examination responses entered by students, forcing them to retake the assessment at a later date.[166]

Data protection, privacy, consent and exploitation. The rush to embed edtech in education also surfaces issue of data protection, privacy, consent, and the exploitation of student data. A coalition of organisations led by Privacy International produced an open letter to policy makers, data protection authorities, and providers worldwide, regarding rapid technology adoption for educational aims, which drew attention to the risk of monitoring, profiling, data mining, marketing, or manipulation for commercial exploitation.[167] At the same time, the World Privacy Forum issued a report finding that many schools routinely fail to obtain informed consent when signing students on to edtech services, a situation exacerbated by the rush to utilise edtech for remote teaching.[168] Reports in the US suggested that, at the outset of school closures, existing data privacy laws were waived at the level of whole districts to ensure schools could use digital learning platforms.[169] We can see these waivers as instances of 'coronawashing' principles of privacy and data security, with potentially long-term consequences for how data protection and privacy are enacted in educational institutions.

165   Chamuah, A. & Ghildiyal, H. (2020, April 16). AI and education in India. Tandem Research. https://tandemresearch.org/publications/ai-and-education-in-india
166   Wan, T. (2020, May 14). Online AP testing glitches force some students to retake exam. *EdSurge*. https://www.edsurge.com/news/2020-05-14-online-ap-testing-glitches-force-some-students-to-retake-exam
167   Privacy International. (2020, April 24). Schools and Covid-19. PI. https://privacyinternational.org/news-analysis/3709/schools-and-covid-19
168   Dixon, P. (2020, April 14). Without consaent: An ananlysis of student directory information practices in U.S. schools, and impacts on privacy. World Privacy Forum. https://www.worldprivacyforum.org/2020/04/without-consent/
169   Lieberman, M. (2020, March 26). Massive shift to remote learning prompts big data privacy concerns. Education Week. https://www.edweek.org/ew/articles/2020/03/26/massive-shift-to-remote-learning-prompts-big.html

7. Ownership and control

Commercial activities in education during Covid-19 also raises issues over ownership and control. First is the issue of data ownership. Technology companies and education businesses that collect data from the activities of educators and students can be said to 'own' the data they collect. This gives them unprecedented advantage to leverage the data for the purposes of generating insights that can be used for product refinement, new product creation, and the generation of further commercial gain. The teachers and students that use these technologies can, in turn, be understood to be performing invisible and unrecognised labour for the owners of the platforms, infrastructures and services.

The second issue is then that of curriculum control. Organisations as varied as Google, Pearson, Oak National Academy, ISTE and Yuanfudao have in many ways established control over what gets taught during school closures. This raises old questions about how content, knowledge and skills were selected for inclusion in these emergency Covid curricula. It also raises the question about whether such curricula might be continued into the future. Commercial organisations, and the multisector coalitions and partnerships that have supported their expansion in education during the pandemic, are driven by their own idiosyncratic visions of education and by their institutional values. The education company Pearson prioritises particular skills that it considers valuable. The OECD treats the purpose of education as the increase of 'human capital' for the economy. Amazon, Google and Microsoft, as well as tech philanthropies the Gates Foundation, Schmidt Futures and Chan Zuckerberg Initiative, all share the belief that 'personalised' learning – enacted through adaptive learning platforms that 'tailor' access to content in order to optimise the 'mastery' of the individual – is preferable to the idea of a collectively pursued curriculum. This particular configuration of personalised learning is the nexus point of both data ownership and curriculum control, as those organisations that have the capacity to process student data also have the capacity to control their access to curriculum content and knowledge via adaptive software.

8. Research priorities

The key issues arising from the mapping of commercialisation and privatisation of education in the context of Covid-19 point to a number of urgent research priorities:

- Studies of the extent to which schools maintain their use of education technologies employed during periods of

lockdown, and how this affects key schooling practices and teachers' work including curriculum delivery, pedagogy, assessment and learning management.

- Sustained research on the promotion, roll-out and uptake of educational technologies and associated practices during the pandemic in low-income countries and international development contexts, including detailed focus on development agencies and multilateral organisation influence.

- Ongoing analysis of country-specific policy evolution and mutation in relation to commercialisation, privatisation and education technology as nations revert to in-school education, including studies of key government priorities and private sector involvement in shaping policy agendas, and attention to cross-border 'travelling policy' dynamics.

- Research on emerging (re)configurations of the global education industry in different local and geographical sites, tracing out new public-private partnerships, new sources of influence and expertise, and new priorities regarding education technology (e.g. edtech 'evidence' and 'what works' programs) in the context of diverse policy spaces.

- Studies on global technology companies' increasing involvement in public education (Microsoft, Google, Amazon) focusing on their competition for structural dominance of school infrastructure, data collection and processing practices.

- Research on emerging priorities in education technology development, particularly AI and safeguarding and social-emotional learning technologies that have expanded in reach during the pandemic, and their impact on school practices over the longer term.

- Detailed analysis of financial models and practices, particularly venture capital, philanthropy and impact investing, which have been developed and expanded to fund education technology development and dissemination during the crisis, and their long-term implications.

- Research on the emerging phenomenon of private online home tutoring as a new instantiation of the 'shadow education industry', exploring parents' motivations to maintain subscriptions to fee-paying edtech products and their producers' strategies of marketing to and profiting from parent consumer markets.

9. Recommendations for education unions

While it is difficult to know the long-term effects of Covid-19 on education policy and practice, it seems likely that 2020 will be referred to as catalyst for ongoing change in schooling. Already, there have been numerous reports of the work intensification teachers have experienced in adapting learning to online instruction. Similarly, our mapping shows there has been a dramatic uptake in commercial resources by educators to help them achieve this continuity of learning. Previous research cautions us that the commodification of education can come at the expense of teacher autonomy (e.g. over what aspects of the curriculum are valued, taught and assessed), professionalisation (e.g. limited opportunities to enact professional judgement), and work conditions (e.g. work intensification, diminished wellbeing, devaluation of the profession, decreased salary and loss of jobs). Responding to these implications must sit within a context of ongoing debate concerning the appropriate intensity of edtech in schooling, the regulatory environment that surrounds the use of these products and services, the equity issues that influence the ability of all students to access these, and the enhancement (rather than diminishment) of teachers' professional capacities. In many ways, the recommendations we would proffer to education unions are no different to the work they already collectively do to support the teaching profession in varied ways. We would summarise these into three broad categories – research, advocacy and promotion – each of which we detail further below.

Research. Education unions have a key role to play in supporting education research agendas. Funding local, national, and in the case of Education International, global, research projects is a hugely beneficial way to generate evidence-informed knowledge about commercialisation and privatisation in schooling. However, it's not the only way. There are opportunities for education unions to partner more closely with researchers and research institutions, and provide in-kind contributions to these partnerships. Education union officials have unique insight into the challenges faced by their teacher members, and can work productively with researchers to establish meaningful research agendas. Furthermore, they have the resources to best promote research to their teacher members and encourage their participation in relevant projects. From our experience, education unions are also skilled at disseminating research findings to broad publics through political, social and member related advocacy. We would encourage all education unions to develop research partnerships, set common agendas and work together to generate knowledge that can be used to advocate for policies and practices that will enhance the rights of teachers and students.

Advocacy. As we have outlined in this report, despite the dangers of edtech, it has enabled schools and teachers to provide continuity of learning to students that otherwise may have been lacking without the influence of the private sector in education. However, we see the role of education unions as being a critical voice of reason within this rapidly evolving environment, with a key role to play in ensuring that issues are challenged and debated, without allowing them to be uncritically adopted into mainstream schooling. Education International's mantra, 'students before profit' is an example of the critical advocacy work that needs to be carried out by education unions armed with research-informed knowledge. This advocacy work might start with teachers in schools and jurisdictional governments, but increasingly it also means working in coalitions of public and private actors. There is a growing need to ensure that commercial actors are increasingly accountable for the public that they are servicing – largely on a for profit basis. We would suggest that all education unions look for opportunities to be more involved in education coalitions, from the local to the global level, so that they might pose challenging questions, and demand considered action – as Education International has already begun to do through its participation in the UNESCO Global Education Coalition. While it is difficult to see a future for education that doesn't have elements of commercialisation and privatisation, it is possible to imagine better regulation and oversight of private interests.

Promotion. At the beginning of this report we mentioned it was important not to adopt a dystopic view of the future of schooling from this research. More productive would be to establish a shared vision for the future of schooling. This vision might include what sort of private sector influence is useful in schooling, what further regulations are required, what student equity of opportunity looks like, and the role of teachers. Education unions might then work with a range of stakeholders to assist in the development of this vision. We would argue that standing against commercialisation and privatisation in all its forms is unproductive. Instead, having an understanding of what is acceptable, and indeed, necessary, might assist education unions to promote a shared vision that all education stakeholders can get behind.

Conclusion

We began this report reflecting on Klein's (2007) notion of 'disaster capitalism', and throughout we have explored a variety of ways in which commercial opportunities have been identified and sought in education by different actors and networks during the Covid-19 crisis. In many ways Klein's conceptualisation is a useful way to understand commercialisation and privatisation of public education through edtech during the emergency of global school closures and home-based learning. From what we have observed, large edtech companies, edu-businesses and technology corporations are investing in taking new and existing products to scale during the pandemic in order to capitalise into the future. But we hope the report has also offered a nuanced perspective, identified some of the subtle ways in which commercialisation and privatisation are playing out, and acknowledged that without private sector involvement many millions of students worldwide may have lost access to education altogether during the pandemic.

Furthermore, many of the organisations we have identified in the report are not themselves commercial actors. What we have observed is a huge effort to create multisector coalitions, public-private partnerships and networks in which commercial actors play a key part, and we have seen the development of a range of interdependencies between various organisational types, from multilateral policy influencers, wealthy tech philanthropies and government departments to global technology corporations, edu-businesses, venture capital investors, and public institutions. We believe we have begun documenting a particular instantiation of the global education industry and the dynamics of networked governance in education at a particularly complex point in time, prompting us to return to longstanding concerns about the role of transnational private authority in education systems:

> *The shift in authority from the state to private actors might make sense on efficiency grounds, but also entails the undermining of democratic control of public education. Moreover, the professional autonomy and rights of teachers, as well as the local control of communities over their schools, may be undercut by the shift in authority to private, corporate, and global actors. Similarly, it is reasonable to question whether the shift in accountability*

structures away from democratic modes to corporate/consumer arrangements reshapes the orientation of education as a public good.[170]

We wonder whether we are seeing a particular evolutionary leap and mutation in the global education industry and in the ways that the private sector and public education intersect. It is unclear yet whether the activities documented in this report will lead to lasting long term changes, or whether on their return schools will abandon the new edtech resources they adopted during the crisis to prioritise social and physical proximity. Certainly, in the medium term period of hybrid schooling models in many countries, we can expect edtech to continue playing a major role in public education, and efforts to embed it for even longer will requires sustained attention and analysis. The commercial activities we have documented in this report indicate an emerging tension that will be at the core of any debates about education after the pandemic has passed: a tension over the very purposes of education, and of what knowledge or skills should be taught in schools to achieve those purposes. Will this continued shift in authority to private actors further undermine democratic control of public education?

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170 Verger, A. (2016, March 14). The rise of the global education industry: some concepts, facts and figures. Education International. https://www.ei-ie.org/en/woe_homepage/woe_detail/4850/the-rise-of-the-global-education-industry-some-concepts-facts-and-figures#gsc.tab=0

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