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## Schools must resist big EdTech - but it won't be easy

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Over the last decade, school-level education across the world has seen the growing involvement of a small number of large technology firms prevalent across all sectors of the global economy. Three of the biggest in the West are Google, Apple and Microsoft,<sup>+</sup> all of which have a vertically integrated business model, meaning that they produce interlinked hardware, operating systems, a range of cloud services, and crucially for this essay, educational platforms.<sup>‡</sup> Their educational platforms - including Google Classroom, Apple Classroom and Schoolwork and Microsoft Teams and OneNote for Education - are tied in varying constellations to their well-known general-purpose hardware (e.g., Chromebook, iPad, Surface) and operating systems (ChromeOS, iOS/macOS, Windows). Such arrangements are often described as technology stacks, where the upper layers, such as the application-level functionality seen by users, relies on lower-level capabilities such as networking, cloud services or even

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<sup>+</sup> This essay owns up to an implicit focus on Western education sectors, and does not consider large players elsewhere in the world, such as Alibaba, or the institutional conditions in which they operate.

<sup>‡</sup> This contrasts with horizontal integration, where complementary services would be offered on the same layer of a technology stack rather than up and down it, such as offering many educational content services.

specific chips or sensors. Educational uptake of all types of layers this stack provided by 'big EdTech' giants saw a further global boost from 2020 due to the remote learning demands of the COVID-19 pandemic (Williamson, 2021).

These firms are far from the only digital services in education (see Decuyper et al., 2021, p. 3), but their vertical integration, deep infrastructural roots into devices, the foundational technologies underpinning computing and the internet, and influence outside the education sector sets them apart. Importantly the infrastructural nature of the power and influence they wield, particularly over medium-to-long-term horizons, appears harder for education actors to reason about than other important educational technology (EdTech) actors such as content providers that provide services more analogous to recognised educational activities and functions.

Plenty has been written on concerns over these and related developments, including a specific focus on issues such as student privacy and surveillance (Hope, 2016; Zeide, 2018) or pedagogical transformation (Perrotta et al., 2021; Zeide, 2020). However, in this short essay I wish to analyse and appraise what policymakers and educational institutions can do to respond to these giants' strategies.

### **What do platforms want?**

The platform business model centres on connection, grouping and intermediation. By placing themselves in between many types of information and communication flows, platforms obtain economic and political power (Srneciek, 2017). A main way they do this is by creatively designing and deploying infrastructures that add stickiness into networks, and make interacting within the platformed part of the network easier than interacting across its boundaries (Cohen, 2019, p. 40). Collecting data and using predictive systems is often thought of as the core tool for platforms in establishing these boundaries (Srneciek, 2017), but many other effective strategies are used in concert, such as setting standards, controlling the development and functionality of hardware or software, binding users through technical standards or contracts, the effort of learning alternative systems, or providing often heavily subsidised bundles of complementary services. As the

platform decides many of the rules of the game for the actors within the bounded part of the network, they can configure systems to extract economic rent or power for a range of purposes. As a result, despite the ambitions of internet pioneers of flatter, less hierarchical governance, for platforms, networks have proven to be a lucrative organising principle.

### **Impacts on platform participants**

Participants interacting with platforms in the education sector play different parts in platform strategies. Here I focus on the impacts that interact directly with those strategies, rather than other (hugely) important issues such as pedagogical or social outcomes.

#### *Students*

Students are an obvious starting point. As they grow up, the platform-related choices made for them earlier on in life can stick with them due to non-material factors such as training and comfort, and material factors such as continued use of devices invested in by schools, parents or guardians. The strategy is familiar to old digital giants. Design software from Adobe, or operating system and office software from Microsoft, has been remarkably easy to pirate throughout its history, even when greater security techniques were possible. Rather than lost revenue, this has been characterised as a way to dominate emerging markets and consumers and create barriers to entry to defend against similarly featured, free and open source alternatives, such as GIMP or Linux (Karaganis, 2011, pp. 51-52). Bill Gates stated in 1998 that 'as long as they're going to steal [software] we want them to steal ours' (quoted in Grice & Junnarkar, 1998). In 2006, Hal Varian, now Google's chief economist, compared software usage to drugs: 'the first dose is free ... once you start using a product, you keep using it' (quoted in Piller, 2006). The choices that schools make cannot easily be separated from the governance of platforms in society more broadly.

#### *Teachers and other school staff*

Schools, teachers and administrators can also find themselves tied into a single platform's ecosystem. This may be because

technologies are sold as a bundle; it is hard for a school to justify purchasing a separate email or office or administrative system if roughly suitable technologies are bundled in with classroom technologies, such as Google Workspace for Education Fundamentals or Office 365 Education. Notably, both of these tools have entirely globally free tiers, including cloud storage, videoconferencing and office software, which makes it hard to justify any software spend on competitors that do not have this broad, cross-subsidised, horizontal integration. Yet these free tiers may not meet all future needs; nor is there a firm guarantee they will be free forever given changing basic requirements. By the time they are integrated into technical systems and social routines, schools are likely to find it easier to upgrade and begin paying rather than to consider all potential options from scratch.

Wholesale reliance can be reinforced by the lack of funding or technical capacity in education. Remote technical support for both software and hardware can be part of platforms' offerings to underfunded sectors, taking this role away from schools and making local IT support staff difficult to justify. Remotely managed, packaged services also look appealing to schools faced with cybersecurity threats, particularly ransomware, the prevalence of which has increased in the UK education sector year-on-year (NCSC, 2021). Yet this trend means that where IT professionals do exist in schools, they are more likely to turn into 'licence managers' than have the organisational, practical and technical know-how previously expected of them (Balayn & Gürses, 2021, p. 110). Expertise bundled into platforms' cloud packages is hardly likely to diagnose the issues of lock-in, nor provide independent counsel for taking action such as diversifying or migrating away that would be inconvenient to the platforms.

In a similar manner, teachers can be reconfigured by platforms as part of strategies to increase their indispensability. Perrotta et al. (2021, p. 12) argue platforms transform teacher-student practices and relations from 'actual teaching' to facilitating and coordinating the 'slotting' in of automated tasks and modules. Insofar as these skills can be platform-specific - and, given the integration with a huge amount of other types of software for communication and content creation, they will tend

to be - teachers can be reconfigured as agents perpetuating certain platforms' dominance.

### *Third party content providers*

Education content vendors are coerced to design for ever-closer integration with these platforms. This predominantly occurs through these vendors using application programming interfaces (APIs) of the platforms, such as Google's Classroom API, which they need to use to connect with the systems schools are using. Integration with large platforms' APIs is typically thought of by developers as a risky business. They tether the firm to a platform that can expand and contract functionality and alter contractual terms with the aim of allowing certain operators to shut down and others to flourish (Bucher, 2013). Even if the large platforms themselves choose not to become content providers, this type of infrastructural integration extends platforms' power over other EdTech providers in national and international markets, and imposes structural decisions shaping the kind of pedagogy or interactivity that is facilitated, and the types that are not. In the future, it is not difficult to imagine that this may extend to directly facilitating interactions between pupils across schools, or even internationally - yet, on current trajectories, when and how an impactful shift such as this occurs will be on the platforms' terms, not that of schools' or potentially even local content providers'.

### **Can anything be done?**

Some of the challenges of platforms in education are common to the general regulation of 'big tech', and can be seen through the lens of that literature (e.g., Moore & Tambini, 2021). This essay is not the space to unpack all of those general strategies and initiatives. Instead, here I focus on two possible approaches to providing countervailing forces to platformisation in education in particular.

### *Collective agreements against a credible threat of withdrawal*

It does seem possible to force changes to educational platform practices in extreme situations, if collective measures are

taken, and backed by a credible threat of withdrawal.

In May 2021, the Dutch Data Protection Authority warned that schools could not use Google Workspace for Education in the new 2021 academic year, as a report by consultancy Privacy Company in 2020 indicated high privacy risks emerging in particular from the telemetry and diagnostic data that Google collected for its own purposes and analysed beyond the context of the contracting school. Against this backdrop of a potential prohibition, the Dutch cooperative of school boards for ICT purposes, SIVON (and the equivalent organisation for higher education, SURF) engaged in negotiations with Google. It obtained an agreement that Google would move from being a (joint) data controller, and that it would process personal data of students and staff for 33 of its own purposes, to a data processor, where it would only be able to process data for three narrow, pre-agreed-upon purposes on the explicit instruction of the school (Nas & Terra, 2021). Interestingly, this agreement appears to be only operational in the Netherlands through a contractual amendment, indicating the reluctance of Google to distribute the negotiated benefits elsewhere.

Such developments were only possible because they occurred against a backdrop of this platform operating illegally to the point that the regulator threatened a prohibition and gave a timeline for improvement. Platform behaviours damaging the long-term independence of the educational sector, rather than the immediate misuse of personal data, typically fall short of unambiguously breaking current law. No obvious regime exists to protect the education sector against powerful, informationalised business interests. Competition law, and even new ex ante competition-like instruments such as the EU's Digital Markets Act or the UK's proposed Digital Markets Unit still centre on consumer welfare rather than the specific interests of the educational sector. Even where data misuse can be pointed to, despite the UK having near-identical data protection law to the Netherlands, the lack so far of the Information Commissioner's Office threatening to prohibit Google Workspace for Education means negotiation in the UK would start from a much weaker position.

Furthermore, we can see that where the law is not broken,

even countries like the Netherlands with strong collective agreements struggle to protect against data misuse by platforms. A parallel tale to the success of the Dutch Data Protection Authority and Privacy Company is the tale of interoperability of EdTech in the Netherlands. While there was significant proactive coordination to ensure national EdTech vendors signed up to governed interoperability requirements, in practice, the largest platforms, such as Google and Microsoft, have subverted such requirements by engaging with different education platforms as an identity provider, gaining a nodal position while not having to adhere to the interoperability requirements all other Dutch EdTech providers do (Kerssens & van Dijck, 2021).

From these two tales, it seems a credible threat of withdrawal is needed to fuel successful collective action. This highlights the urgency of seeing the educational sector through the lens of the new regimes to regulate platforms, such as the draft Digital Markets Act in the EU and the forthcoming Digital Markets Unit awaiting a statutory footing in the UK. Educational actors must discuss with regulators how to put the sector on legal notice, how to collectively agree a vision for the future, and then, together, consider how they can achieve change.

#### *Layers of alternative generative and maintenance capacities*

Where there is a demand for more advanced technology stacks in education - such as for videoconferencing to continue forms of education during lockdowns - platforms can appear the only technically feasible option. To stop this becoming inevitable, viable alternatives are required, and schools and educational decision-makers have key roles in bringing them into existence and keeping them there.

Yet even attempting to do so requires cooperation, collaboration and collective action between educational organisations, which is lacking in some jurisdictions. Individual schools cannot invent and maintain modern technology stacks alone. Platformised alternatives now develop, test and maintain modularised software at internet-scale (Gürses & van Hoboken, 2018). Alternatives do not need the billions of users Apple,

Google or Microsoft claim, but without some scale it is difficult to create comparable functionality, security or be responsive to new needs and developments.

Several countries have collective or membership organisations representing the education sector in ICT-related negotiations, such as SIVON in the Netherlands. The UK lacks a general-purpose overarching organisation for primary or secondary education, relying on a patchwork of capacities at multiple levels. Nationally, procurement frameworks and guidelines exist. Local authorities or coalitions of them may establish shared IT support initiatives. Scotland, for example, organises online services for its state schools through a national credential management system called Glow.

Yet, as it stands, these patchworks of support levels are becoming conduits for platforms such as Google Workspace and Office 365. Many are 'Google for Education Partners'. One of Glow's main contemporary functions is providing access to schools to both systems across Scotland. There is a need for these organisations to have a longer term strategy role in representing the sector's interests *against* platformisation, rather than acting as a conduit, further subsidising already questionably cross-subsidised services and ensuring their ubiquity as a foundation for all other EdTech. Yet the fragmented and privatised nature of procurement, technology assessment and management organisations for schools in the UK, and particularly outside of Scotland, inhibits meaningful possibilities of representation at a level that will be able to apply any pressure to platforms at all.

A wide variety of school types, chains of accountability and governance mechanisms further fragment and limit the possibility or impact of sector-wide cooperation in jurisdictions like England. A 'divide-and-conquer' approach suits platforms well as *they* can be the unifiers, and benefit from the distinction between the low-friction bounded platform zone they create in a network and the residual background stickiness and friction created by fragmentation.

In areas where larger-scale coordination exists, or were it to be further supported, such bodies might try creating or supporting alternatives to mainstream platforms, potentially through international collaboration. For example, open source

technologies such as BigBlueButton, a specialist, web-based videoconferencing platform for teaching, and Moodle, a widely used open source learning management system, both have community-supported business models, supported either directly by users or specialised contractors. A further genre of 'community source' projects takes a more structured approach between clubs of institutions working together on software development, which may vote on their progress or development. German universities provide software platforms for administrative tasks through a jointly owned cooperative company, HIS (Hochschul Informations System eG) (Kerres, 2020, p. 691), while in the US higher education domain, Sakai and Quali are foundations developing open source learning management systems and financial and administrative software respectively (Jisc, 2013).<sup>†</sup>

Initiatives to study and promote open source development in education have existed in the UK, such as OSS Watch, and some work and funded projects in higher and further education by sectoral education charity Jisc, but there appears to be less momentum in this area than in the early 2010s.<sup>1</sup> Potentially due to a lack of expertise or scale, this approach has also been more common in universities than schools – although similar platformisation trends are empirically visible in higher education (Fiebig et al., 2021).

Retaining and building IT expertise, developing alternatives and resisting cross-subsidised educational software bundles like Google Workspace or Office 365 has a cost. If educational institutions choose to put their own constellations of systems and software together, someone has to be around to maintain it and its bespoke quirks. In contrast, while platforms like iOS or Chromebook internally arrange their software development in a highly modular manner, they do not offer users the same granularity of choice, instead bundling components together and constantly updating, changing and managing these homogeneous bundles at vastly more economic internet-scale (Gürses & van Hoboken, 2018). The difficulty of customising less vertically integrated software to local needs while

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<sup>†</sup> Germany generally has much more adoption of open technologies in education; see, for example, an empirical study of the university sector by Fiebig et al. (2021), which considers, inter alia, BigBlueButton and Moodle.

providing economical, scalable (and thus likely remote) support, should not be underestimated. It is this area of configuration, customisation and support that perhaps needs the most focus and institutional experimentation to get right and not frustrate or create excessive labour for local users.

A final challenge is that coalitions investing in the development of alternative, open software can be easier to justify supporting when proprietary alternatives cost a licence fee that goes down a sinkhole, rather than when the alternative is 'free'. At its core, making the case for spending to limit the homogenisation of the education sector by big EdTech firms requires governments to take a mature approach to understanding the value of such investments. Can we put a price on the significant loss of control of a country's education infrastructure?

### **Conclusion**

Schools are slowly becoming extremely reliant on a few large companies' entire technological stacks in order to operate. In turn, these stacks are reshaping what schooling is and could be, and exercising unaccountable control over students, teachers, administrators and content providers alike. It is not on the cards for the educational sector to become technologically independent or 'sovereign'. Technologies will reshape the sector, and not all of those decisions will ever be able to be made by individual schools. But that is not to say that the sector cannot summon countervailing forces that allow it to stay strong in the face of these developments. This essay has been a modest effort to stimulate further thought in that direction, focusing on collective negotiations and joint collaboration on alternative technologies and support systems. This will not be an easy task in many areas, and may require rethinking underlying institutional conditions to give schools a more coherent and collective voice and resource.

Going forwards, there are reasons to think that big EdTech will become bigger and more vertically integrated still, particularly in relation to the use of artificial intelligence (AI) in education. AI's true pedagogical use is still questionable, but its political economy is much clearer. A small number of companies, many, like Google and Microsoft with significant

EdTech interests, spend tens of millions of a dollars at a time to train models to analyse or generate text or multimedia, which bring a range of daunting policy challenges (Bender et al., 2021; Cobbe & Singh, 2021). Insofar as deployment of AI in education is broadly yet-to-come, it is crucial that schools and related decision-makers grapple now with the political economy of the technology stacks they are enmeshed in, in order not to lose further control of key pedagogical choices in the years to come.

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1 <http://oss-watch.ac.uk>