# Education Data Reality

## The challenges for schools in managing children's education data

Digital Futures Commission
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DIGITAL FUTURES COMMISSION
Innovating in the interests of children and young people

5RIGHTS FOUNDATION

# The Digital Futures Commission

The Digital Futures Commission (DFC) is an exciting research collaboration of unique organisations that invites innovators, policymakers, regulators, academics and civil society to unlock digital innovation in the interests of children and young people. It seeks to put the needs of children and young people into the minds and workplans of digital innovators, business, regulators and governments. It calls for a critical examination of how children's lives are being reconfigured by innovation to reimagine the digital world in value-sensitive ways that uphold rights and take practical steps to meet children's needs.

The DFC research team, led by Professor Sonia Livingstone OBE, has three work streams: play in a digital world, beneficial uses of education data, and guidance for innovators. Each is informed by the voices of children and underpinned by research and outputs geared toward real-world change for children.

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# Contents

Foreword 4
Executive summary 5
Introduction 7
Research questions 8
Methods 8
The technology landscape in schools 10
Which data are processed from children and why? 12
Data processed for administration and safeguarding 13
Sensitive and biometric data processing 15
Data processed as part of using services for learning purposes 17
How schools approach their data protection obligations 21
The risk- and intent-based approach of GDPR 21
Schools consider data protection primarily through a safeguarding lens 22
Difficulties in procurement and contracts with EdTech 23
Knowing (or not) which EdTech is used and the risks 24
Difficulties of responsibility for oversight 25
Students and parents: the missing part of the puzzle 26
School views on beneficial education data 28
More and better curated data 28
Data to understand children's needs 29
Technology can make teaching more efficient 31
School views on problems of education data 33
Benefits are not discernible or not in children's best interests 33
Varying and (often) unreliable digital infrastructure and resources 36
Patchy access to and security of digital devices at school and at home 37
Data are disproportionately collected and underused 38
Limits of schools' control over data processed from children 40
Recommendations for change 42
Governmental and regulatory bodies 42
EdTech companies 43
Schools 44
Priorities for change 44
References 46
Appendix: Interview topic guide 49

# Foreword

What role and responsibilities do and should schools have for student data? What kind of data is routinely collected, on what basis, for what purpose? What support are schools given by Department of Education, the regulator (Information Commissioner's Office) and industry? And what if any are the risks and benefits for children? This Digital Futures Commission (DFC) report answers these questions through the eyes of the school community with lived experience of tackling the confusing and opaque world of data processing. It unearths some uncomfortable truths.

School is not optional for children, which makes it a worry if giving up personal data as is normalised as the price of access to education and school. As the report makes clear, the bar for obtaining consent to processing children's personal data – whether for safeguarding, teaching or simply standing in the lunch queue is at best superficial, and in many cases offers children no meaningful choice. This is perhaps best illustrated by the school that refused to be interviewed because "they had not got their heads around data protection yet" or the parent who explained that when she denied the school permission to collect her child's data on one of the most ubiquitous teaching platforms, her child was removed from the class and put in a room alone with a teaching assistant. Needless to say, she ended up relenting in order for her child to re-join the class.

Meanwhile, the chain of responsibility is asymmetric, privileging the companies whose opaque terms allow them to gather and monetise data, while holding school administrators responsible for the outcomes to children. Similarly, the Department of Education recommends digital tools but fails to quality check them, leaving schools to decipher what good looks like or, even worse, left responsible for products that appear to have official blessing but are often not fit for purpose.

This report is an important snapshot of what these issues look like on the front line. In the autumn, the DFC will be publishing two important case studies that serve to illustrate in worrying detail the issues raised by teachers, administrators, parents, and young people. We will also be publishing a book of essays in which leading experts rethink how we might approach education data to deliver greater benefit for children.

Many in education are increasingly worried about the gap between the claims for EdTech and the educational benefits, concerned at the lack of consideration for the long term risks to children of processing and monetising the intimate data taking throughout their developing years. This report is an important contribution to highlighting those concerns.

As ever, our thanks to the report's authors, Sarah Turner, Kruakae Pothong and Sonia Livingstone, to the 5Rights team for their exemplary support, and to our DFC Commissioners who guide, engage and encourage this important work.

*– Baroness Beeban Kidron OBE*

# Executive summary

Schools have always collected data relating to students' attendance, attainment and wellbeing or safety. But the amount of data collected and shared with others has grown massively in recent times. This has been exacerbated by the coronavirus pandemic, which led to the introduction of learning environments, online educational tools and device use in the (virtual) classroom in ways that would have been unbelievable even as recently as 2019.

This report details the findings of interviews undertaken with professionals who work in or with schools on the procurement of, data protection for, or uses of digital technologies in school. Focusing on the collection and processing of education data, we identify the steps needed to enable schools to harness the benefits of education technology (EdTech) and education data while mitigating the risks that can result.

Schools operate a complex system of EdTech that collects children's data for administrative purposes, assessing learning progress and potential, safeguarding and reporting to government. The need to have strong data protection measures in place in relation to these systems was evident to all. However, by considering data protection as part of a school's safeguarding measures, privacy and other children's rights can become side-lined.

Schools varied in their enthusiasm for EdTech, the primary benefits of education data being streamlining school processes, pinpointing children's needs and making teaching more efficient. Overall, however, demonstrable improvements in educational outcomes remain unclear, although schools were more positive about administrative and safeguarding benefits of education data. Worryingly, schools found it hard to answer some of our questions about how children's education data are used or why, making it hard to ensure that education data is used in children's best interests.

Overall, it appears that children's education data are both disproportionally collected and yet underused to benefit them. The data protection challenges that schools face were very salient, due to the power imbalance between schools and major EdTech providers, the complexity and opacity of EdTech data processing, and the paucity of guidance on EdTech decision-making and procurement from government. The patchy access to and security of digital devices at school and at home is also problematic for schools.

Managing EdTech and education data constitutes a significant and increasing pressure that individual schools must bear, resulting in uncertainties over – or more likely, failings in – the protection of children's personal data and its uses for their benefit.

This report concludes with a four-part call to action:

1. **Schools expect and want support in choosing EdTech solutions that are effective, rights respecting and safe.**
2. **Schools expect EdTech providers to act in children's best interests in their use of data – and these should be held to account by the Department for Education (DfE) and the Information Commissioner's Office (ICO).**
3. **Schools need more support to ensure they have the infrastructure, resources and staff experience in school to manage children's education data properly.**

4. **Students need equitable technology access at home to facilitate their education as society moves increasingly towards a reliance on online learning.**

# Introduction

> "I want to create an ecosystem where good tools can spread quickly across and between families of schools and colleges. Where data can be shared effortlessly in a system that is safe and secure and that enables the right people to see the right things at the right time. I want teachers and leaders to have easy access to the information they need, in formats that are easy to digest. And I want the DfE to be the most data-driven department in government because young people's learning depends on it." (Rt. Hon. Nadhim Zahawi MP, Education Secretary, March 2022, quoted in DfE, 2022b)

Now that digital technologies are ubiquitous in all walks of life, the data that such technologies create, process and share arouse many hopes for present and future benefit, not least in the education sector. They also arouse considerable anxieties. Even prior to the forced remote learning brought in by the coronavirus pandemic, the government's desire was to embed EdTech as much as possible, to leverage tools that help teachers teach and students learn, and corral data that enables meaningful and consequential analysis (DfE, 2019).

**Does data processing improve education? Which values are prioritised as the commercial EdTech is embedded in the education system? And which actors can influence outcomes for children? This report elicits schools' perspectives of EdTech's role in education, especially in relation to the data processed from children for educational and other purposes.**

Many individuals within a school have responsibilities for, or engagement with, digital technologies and data. At the Digital Futures Commission (DFC) we have been interviewing those with responsibility for the purchase, governance and use of digital technologies in state schools in England, as part of our work stream on the beneficial uses of education data. We asked them about the software used, and what they think about how well technology serves their goals, an important consideration given the attendant risks (see the Appendix.

EdTech impacts on many areas of a school's operation and involves many staff. Teachers use EdTech when teaching in the classroom or as part of setting homework or pointing students to additional learning resources. Such software is (or should be) subject to procurement processes – even if free at the point of use –to access its suitability and value, among other things. School senior leadership teams are expected to have input or oversight into such processes. Governing body members have the ultimate oversight of policies and budgets relating to purchasing such technologies. Purchasing software will likely have to gain approval, or assent, from relevant IT or network managers. The General Data Protection Regulation (GDPR)[1] requires public authorities or bodies to have a data protection officer (DPO) to ensure compliance with data protection obligations.

[1] Implemented in the UK as the Data Protection Act 2018, the original regulation being preserved in the law of England, and Wales, Scotland and Northern Ireland by the Data Protection, Privacy and Electronic Communications (Amendments etc.) (EU Exit) Regulations 2019 (thus, as of 31 December 2019, the UK GDPR).

In this report, we examine the uses, benefits and risks associated with EdTech and education data processing from the perspective of teachers, senior leadership team members, governors and data protection staff. Our purpose is to identify meaningful interventions required to ensure that education data serves children's best interests, and to shed light on who should have responsibility for such interventions. While prioritising the voices and experiences of schools, our analysis is also informed by an ongoing desk review of research relating to EdTech provision and policies.

## Research questions

**In this report we ask: what steps should be taken to enable schools to harness the benefits of technology while mitigating the risks?** To address this question, a number of topics required attention before considering changes needed to address schools' concerns and expectations:

1. What is the EdTech landscape in schools today?
2. What data are processed about whom, and by whom, in UK schools?
3. What practices do schools have in place around data, and who is involved in informing those practices?
4. What are the benefits that schools report from their uses of EdTech?
5. What are the problems to be addressed in realising the benefits of education data in children's best interests?

## Methods

We held semi-structured stakeholder interviews between May 2021 and April 2022. A total of 32 individuals were interviewed, with participants performing a range of roles in the English school system (see Table 1), across a range of geographic areas, and in a number of different types of schools, from large multi-academy trusts (MATs) to individually run schools, both mainstream and for children with special educational needs (SEN).[2] Schools included in the study ranged across the entire mandated educational life of a child in England, from infant schools to sixth form centres, and every style of school in between.[3]

Interviews were held remotely, taking between 30 and 90 minutes. The interview topic guide explored themes related to the processing of personally identifiable data from students (seethe Appendix). Using semi-structured interviews meant that each interview focused on the specific areas of interest and expertise of each participant, providing a good understanding of the issues as contextualised within the wider scope of schools' aims, concerns and needs. Once the interviews were completed, they were fully transcribed, anonymised and analysed using NVivo software.

[2] Participants were recruited using the researchers' networks and calls for participation over Twitter and LinkedIn. They were also asked for contacts who would be suitable and willing to participate. An email consent process was devised and informed participants of research objectives, data management and research ethics (including confidentiality, anonymity and their right to withdraw without adverse consequences).
[3] The decision was taken to talk to schools in England, rather than the entire UK, when it became apparent that participants covered a wide area within England but would not be able to provide a large enough sample for the devolved nations. As the curricula and governmental structures in each nation in the Union is different, although certain recommendations may be applicable across the UK, painting each nation with the same brush without an equally representative sample of stakeholders would not be appropriate.

**Table 1: Participants interviewed for this research**

| Participant | Role(s) | Place of work | Age of children in school |
|---|---|---|---|
| 1 | Data protection officer | School | 16–18 |
| 2 | Former headteacher | School | 16–18 |
| 3 | Union staff | Union | Not applicable |
| 4 | Union staff | Union | Not Applicable |
| 5 | Chair of governors | School | 7–11 |
| 6 | Data protection officer | External data protection officer | Not applicable |
| 7 | Data protection officer | External data protection officer | Not applicable |
| 8 | Data protection officer and data analyst | MAT | 4–11 |
| 9 | Data protection officer | External data protection officer | Not applicable |
| 10 | Data protection officer | Local authority | Not applicable |
| 11 | Data protection officer | MAT | 4–18 |
| 12 | Data protection officer | Local authority | Not applicable |
| 13 | Data protection officer and former teacher | School | 11–18 |
| 14 | Data analyst and school governor | School | 11–18 |
| 15 | Data protection officer and former senior leadership team member | External data protection officer | Not applicable |
| 16 | Data protection officer | Local authority | Not applicable |
| 17 | Data protection officer | External data protection officer | Not applicable |
| 18 | Headteacher | School | 11–18 |
| 19 | Data protection officer | External data protection officer | Not applicable |
| 20 | Head of school | School | 11–16 |
| 21 | Data protection officer and school teacher | School | 11–16 |
| 22 | Assistant head and school teacher | School | 11–18 |
| 23 | Data protection officer and head of IT | School | 11–18 |
| 24 | Head of department and teacher | School | 16–18 |
| 25 | Headteacher and union leader | School | 11–18 |
| 26 | Vice principal and school teacher | School | 16–18 |
| 27 | Chair of governors | School | 11–18 |
| 28 | Data protection officer | External data protection officer | Not applicable |
| 29 | IT and computing lead | Local authority | Not applicable |
| 30 | Headteacher | School | 7–18 |
| 31 | Executive headteacher | School | 4–11 |
| 32 | Product manager and former teacher | EdTech company | Not applicable |

# The technology landscape in schools

**In this report, we refer to specific purposes of data-processing activity by schools following the ways in which participants discussed them: administrative, safeguarding and educational.**[4]

We realise that these intersect, as the same data can be processed for multiple purposes, and they may, in combination, be shared with external third parties (such as local authorities, the government and their designated representatives, or research institutions) for official reporting purposes. Particularly prevalent in the use of cloud-based services and online EdTech systems is the sharing and processing of data as part of using the service. This requires schools using these systems to place significant trust in the security and probity of the EdTech companies.

For ease of discussion, we also refer to processing activities based on the systems that are used. Management Information Systems (MIS) are often used with bolt-on software to provide data for official reporting,[5] safeguarding systems and other administrative systems (which may include, for example, finance systems, catering and library systems). There are also Online EdTech systems (those accessed through the internet) and installed EdTech systems (those typically installed on a device, often with a licence), learning environments and other communication systems between school and home.

We derive our understanding of the EdTech ecosystem from our participants' explanations, and recognise that, as a result, certain specific types of applications may receive greater prominence or be relatively neglected.

**To illustrate the sheer amount of technology used to run a school – and the multiplicity of options and systems available for the purposes required, Figure 1 shows the technologies mentioned by the participants.**

[4] Note that these purposes should not be confused with the lawful bases of processing data that are set out under Article 6 of the UK GDPR. These three types of processing (namely, administrative, safeguarding and educational) refer to the purposes for which data are processed in a school context.

[5] Schools are required to share data (e.g., census data) with the DfE according to the relevant laws. For example, schools have a statutory duty to submit the school census individual pupil records under Section 537A of the Education Act 1996. We refer to the purposes for which schools share data under such requirements as 'official reporting'.

**Figure 1: EdTech named by participants in the interviews**

# Which data are processed from children and why?

With digital technologies come data – about students, and about others in and around the school, including teachers and staff, parents, visitors and former students. The advent of the GDPR brought the need for schools to have their own DPOs, as well as significantly higher levels of understanding and control over personal data flowing in, out and around the school (that is, data that identify a specific person). The GDPR requires that organisations processing personal data must have a valid lawful basis for doing so,[6] with additional requirements for *special category data*, that is, data deemed to be so sensitive about a person that they require special care.[7]

As public institutions, schools can rely on processing personal data under the lawful bases of legal obligation or public task,[8] in instances where they use that data to educate children or fulfil legal obligations (such as providing census data to the Department for Education [DfE]).[9] Importantly, this means that, in order to carry out the work of educating children, explicit consent to process personal data is not required from anyone – parent or child. Data processed from children that is not for educational purposes would require valid consent – commonly seen in direct marketing to parents (DfE, 2018a) or the use of biometric tools within schools (DfE, 2018b). This makes for a complex system of data processing in schools, where parents and children[10] may not understand why they are asked for consent for some data processing but not others (as discussed further below). It also means that schools must have a fall-back for students who have not provided consent for the use of these systems.[11]

**We asked the participants about their understanding of the types of data collected and processed by their schools, in order to get a fuller understanding of the extent to which the entire picture of data processing, sale and reuse was understood**. This should not be considered a holistic picture of all the data types processed by schools,[12] but rather, an overview of the picture painted by participants, and in particular, the

[6] UK GDPR Article 6, Data Protection Act (DPA) 2018, Chapter 2(8).

[7] Special category data are defined as data about racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership, genetic data, biometric data, health data, data about sex life or sexual orientation (for more details, see https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/lawful-basis-for-processing/special-category-data).

[8] UK GDPR Article 6, DPA 2018, Chapter 2(8). Article 6(1)(e) provides the public task lawful basis for processing where: 'processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller'.

[9] UK GDPR Article 9, DPA 2018, Chapter 2(10) prohibits the processing of special category data. Article 9 provides exceptions to this general prohibition and requires a further condition to be met in order for lawful processing to occur. Article 9(g) provides 'reasons of substantial public interest (with a basis in law)' as a condition for processing special category data. If an organisation relies on the substantial public interest condition in Article 9(2)(g), it also needs to meet one of 23 specific substantial public interest conditions set out in Part 2 of Schedule 1 of the DPA 2018.

[10] Children in England can consent to the processing of their data once they turn 13.

[11] The existence of such fall-back systems could raise questions as to the data processing required by the new system – if you can implement the system without the additional data processing, what benefit does it provide that makes the additional data collection proportionate?

[12] For details on the statutory uses of data, see Defend Digital Me (2020).

tensions it can raise when considering the different types of activities digital technologies may be performing in a single school.

We found a complex picture, with concerning outcomes for children's rights in relation to data and digital technologies. Schools are now using collected data much more than in the past to try to understand students' potential and actual attainment, and to manage and intervene in behavioural aspects of school life. But the data used to perform this analysis is not necessarily data being given to, and processed by, online EdTech providers, but often other data collected by the school.

**It appears that the data being processed by online EdTech providers are not meaningfully informing an ecosystem that offers schools or governments anything like as much value as is being extracted by the EdTech businesses.**

## Data processed for administration and safeguarding

**When participants were asked about the types of data collected and processed within their school, all started with administrative and safeguarding rather than educational purposes, most often talking about the school's MIS:**

> ...we collect basically everything you can about a student...you can even collect down to things like the doctor's contact details...then you have to have information about their parents and their carers, so you get personal information on other people as well. And it's information you have to have. So, we check when we enrol everyone how many contacts we have for each student, and if we've got students with only one contact, we go back and say we need a second one as a safeguarding issue. (P26, vice principal and school teacher)

Some emphasised that, as an employer, the school holds large amounts of sensitive data about teachers and staff in some administrative systems. Participants also recognised that schools play a crucial role in collecting data about students that is extremely sensitive in nature:

> ...you're collecting an awful lot of restricted data around not just what's happening to a child in school, but their home life, issues around their particular educational needs, but also in terms of their welfare. There's data that's collected around pupil behaviour. There's a range of different data that will need to be collected around safeguarding. There's a lot of quite sensitive stuff that schools have to collect. (P5, chair of governors)

**The quantity of data being put into these systems has increased 'a massive amount' (P13, school DPO) over time, along with the sensitivity of data:**

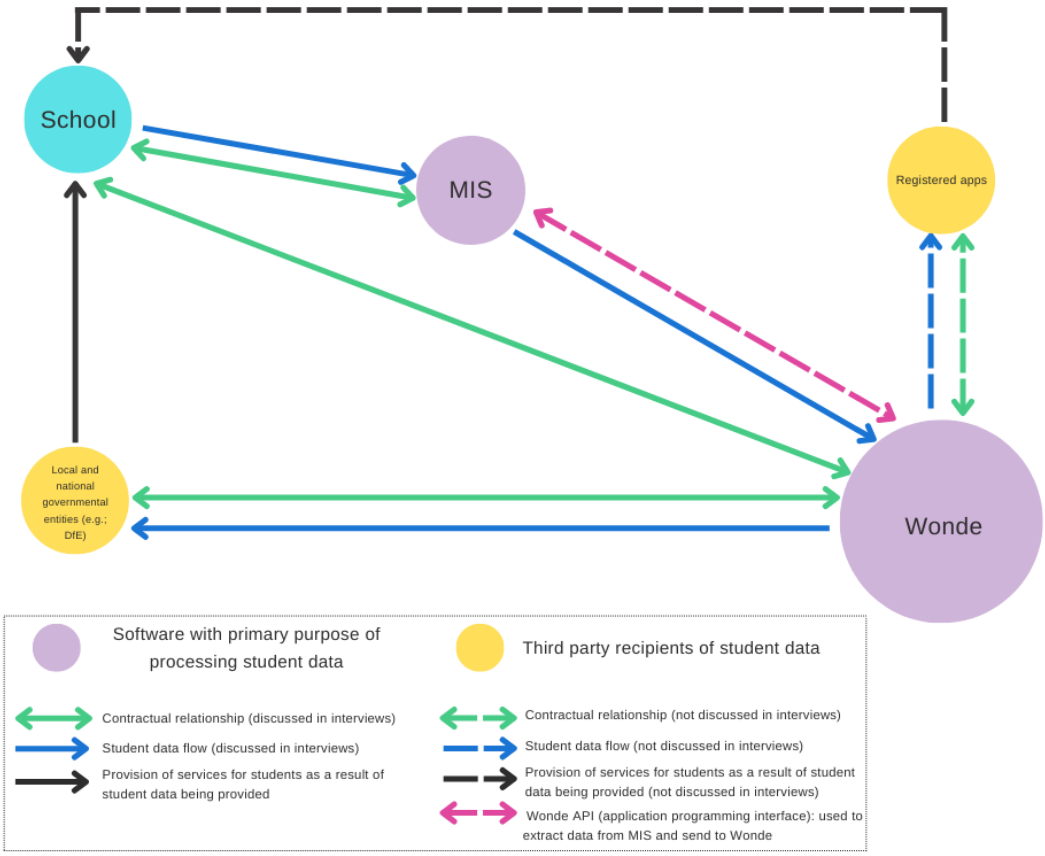
> So back in the day, 20 years ago, MIS data was mainly your child's name...it [was] printed off...attendance lists... And that was as far as it went. Now, they put their behaviour data on, they put their SEND information on, they put their health needs on, everything is on that system. (P10, local authority DPO)

The Secretary of State's vision of seamless data sharing is perhaps most clearly seen in the way that data collected in MIS are used. MIS act as the conduit for data flowing out from the school for official reporting purposes. Depending on the system used, this can

mean connecting the MIS to a number of other 'data management systems'[13] to provide census data, exam data, free school meal data, and so on.[14]

We can illustrate such data processing and sharing activities with the case of Wonde, which is widely used in the UK, and which has contractual relationships with schools and the DfE. Figure 2 shows data-processing/sharing activities related to Wonde. The DfE has an agreement with Wonde, according to which Wonde collects attendance data from the school MIS and transfers it to the DfE daily.[15] Wonde provides similar data transfer processes for other types of school data to local authorities as well as the DfE. It also offers third party apps access to student data on a school-by-school basis, which can enable apps to interact and provide their services to schools. It is clearly a complex ecosystem. Figure 2 shows aspects of data transfer mentioned in the interviews or discernible from Wonde's promotional information.[16]

**Figure 2: How Wonde (a data management system) appears to work from a school's perspective (and publicly available information)**




Data around attainment can be combined with demographic information (particularly details around deprivation) for analysis of pupil progress, both internally, at a pupil, class or school level, and then externally, for wider analysis by third parties. According to the

[13] As Wonde describes itself: www.wonde.com/school/how-it-works

[14] For details on statutory uses of data, see Defend Digital Me (2020).

[15] www.gov.uk/guidance/share-your-daily-school-attendance-data

[16] www.wonde.com/school/how-it-works

participants, however, this is far from a seamless process, with manual data entry and manipulation happening frequently where members of staff are comfortable doing so:

> We have a service…and that gives us value added data which is benchmarked against the top third of sixth form colleges. And that can analyse it by value added, by gender, by ethnicity and so on…We have played about with [other services], which a lot of colleges use. But in the end, we find [manual manipulation of enriched data] is good enough. (P2, former headteacher)

**The potential power imbalance in using these systems is important. Depending on the MIS being used, schools may be required to buy additional bolt-on components to facilitate the required reporting. Despite the sensitivity of the data flowing through these data management systems, participants reported a lack of careful use of personal data by these companies.** This is particularly troubling given the implicit backing by local authorities and government for the use of such systems, the fact that children do not generally have the chance to consent or refuse consent for such processing, and the disproportionate impact of not providing the data on often the most vulnerable children:

> …two of the big [data management systems] that connect to MIS systems… we've had massive rows with [them]… Because those data export routines are easy, it's easier for them to extract everything and send bits. (P10, local authority DPO)

> [A specific data management system] were doing e-vouchers to pay parents food vouchers in the school holidays, and the council had said, we're using [the data management system] to pay the e-vouchers. And then some schools were panicking…[because] [the data management system] had come back with… 'This is the information we'll take'. And it was everything… We actually set up a meeting with [the data management system], and they said, 'No, we don't have to do it.' …one of the things we'd said, is surely it should just be the free school meal people. Here's the information of these six people in my school. But they do it as an all or nothing thing. (P12, local authority DPO)

> I'm not having anybody have our data just for the hell of it. I think it's laziness on their part, or worse. (P23, school DPO and head of IT)

## Sensitive and biometric data processing

**CCTV is widely used within schools, typically around the perimeter, and occasionally in public areas (such as hallways). It is important to note that no participants said that these data were used as the basis for facial recognition, gait analysis or any of the other potentially concerning technological uses of such data (Defend Digital Me, 2022).**

School governors asked about the use of CCTV explained that the topic, when first presented, caused significant discussion:

> …there were a couple of governors who were really, very, quite anti [CCTV]. It was really good because it put the rest of the governing body to task on articulating and really thinking through why we were doing it and what the advantages of doing that were. (P27, chair of governors)

DPOs talked about the process of installing and using CCTV being one of having policies detailing out resolutions to data protection issues:

> We definitely make sure that there is appropriate signage, we make sure that they've got an appropriate policy. We make sure that it has to be two people looking at any one time, you can't just randomly go in and here. It has to be, obviously, time-stamped…you keep it for 30 days or whatever it may be. (P17, external DPO)

DPOs were also aware of the potential for CCTV data to be requested by the authorities without following the proper processes. P17 continued:

> …we've had issues…where the police have come in and go, 'Can we see that CCTV?', 'Well okay, can we have a 212 schedule?'[17]… 'Oh, we don't need to do that.' 'Well, yes you do, we're not giving it away.' And I actually know quite a senior police officer…and he said, yes, sometimes our officers try and just do it because it makes it easier.

The police's involvement with schools, and their requests for personal data, came up in several individual interviews, unprompted by the interviewers. As well as requests for CCTV data, participants described how they had also received requests for pupil data:

> Police will come in and make wide-ranging requests and ask to see the entirety of a pupil's file. And provide the appropriate authority. So, the schools end up having to provide lots of information to the police, sometimes the police just ask for lots of information again to have a fish around and see what they can find. (P16, local authority DPO)

One participant described an interaction with the police about a pupil, and the implications of the request:

> We were contacted by a police agency for something that had been written online that their security systems had picked up…they've come in, they've said, well, you should have done this, and you should have done that… We do need to be checking what they're actually typing in a Word document. I never thought we wouldn't need to know that 15 years ago. But now it seems you do. (P20, head of school)

Many participants expressed unease with the notion that schools, because of the amount of personal data they are required to hold and monitor – right down to the level of tracking keystrokes in online documents[18] – are becoming a conduit for providing data to authorities that cannot otherwise attain it. For example, at the time of interview, many participants had recently been struggling with the data protection implications of

[17] A notice given in accordance with Schedule 2, Part 1, Article 2 of DPA 2018 (which allows the police and other agencies to request access to personal information held by local authorities, including schools, in certain circumstances relating to prevention of crime and apprehension of offenders).

[18] Although the requirement to have such technology does not seem to be part of guidance for schools from the DfE, having appropriate content filtering (and flagging) systems has been reiterated as part of recently published guidance (DfE, 2022b), both for general safeguarding of children, and also to evidence adherence to the school's Prevent Duty (Home Office, 2021).

having to perform in-school COVID-19 testing, asking the DfE for clarification on aspects such as how they could lawfully share the data:

> We had a lot of stuff come to us because of the COVID testing that had to be done...and we just kept having this backwards and forward. You would've thought they'd have had some government lawyers who'd have gone through all of this and covered everything. In the end we just kept asking them questions that we couldn't get answers to, or the answers didn't make sense, it just contradicted something else. (P11, MAT DPO)

Another area where many participants were aware of the need for freely given consent was that of biometric data (DfE, 2018b). Some participants were involved with schools that had some successful applications of biometric data in administrative settings; barring one example of the use of fitness trackers in certain student groups, biometric data was only referred to as being used for catering services, registration systems or library services. Many participants had been involved in deciding against using biometric data for such purposes, strongly advising against it, simply because it was 'far too much to get the job done' (P6, external DPO) or tellingly, rolling back on it because '...we found [a facial recognition cashless catering system] just to be an absolute minefield, specifically with the younger kids, it just didn't work for them' (P8, MAT DPO and data analyst).

The difference in responses for the use of CCTV and biometric data seems to hang on the question of alternative options to achieve the same ends. **Biometric data processing was seen to require a disproportionate amount of personal data for the end result, and thus against data minimisation principles given the lack of significant benefits. By contrast, participants considered CCTV a valuable, even necessary, technology at school for safety and crime prevention.** This may be the case, provided there are strict protocols for access, management and deletion, in public spaces only, and that CCTV is not used to monitor regular student activities.

## Data processed as part of using services for learning purposes

**Participants had less to say about how data and EdTech might be used for educational purposes. The exceptions were the external DPOs, some of whom could even be classified as privacy advocates. They were concerned about how EdTech companies use children's data:**

> ...we have to be pragmatic... I can't hold up a school from using a platform if they are under considerable pressure to use it and they need to use it in order to provide education... But what I do for the ones where it's wide of the mark or specifically wrong, is I will tell the school what the risks are. And then the governors have to accept that risk of that platform. (P16, local authority DPO)

The use of specific EdTech products – in particular, those used online – necessarily require the provision of certain aspects of personal data to be used appropriately. While these technologies may not track special category data, at a minimum a standard online tool will typically require a login, which will often be an email address associated with the child, and a passcode, maybe a name, school details and details of age or school year.

Technical and usage details will also be captured.[19] Details about progress may be shared with teachers (or parents or carers – whoever the adult linked to the child's account is) and may also be further processed by the system to provide more personalised learning opportunities. This information may be further aggregated (to provide a profile of the user), shared – or sold – by the EdTech company to third parties, whether that be for research or advertising.

None of these practices deviate from the status quo of data processing for EdTech companies. However, depending on the type of technology being used, and the relationship that the technology provider has with the school, **it appeared from participants that understanding what data are being used or why, precisely, is much harder to achieve and usually impossible to negotiate given the power imbalance between individual schools and EdTech companies.**

The participants' lack of awareness of the types of data processing undertaken by these data providers is not surprising, and has been considered in prior research (Marín et al., 2021; Vartiainen et al., 2022). Arguably, it is even a reasonable stance to take, given that, from the school's perspective, the use of these technologies is covered under the same lawful basis of processing as before:

> There's very little that they would do via consent, a school, really because most of what they do is to provide an education. They don't have to use [Times Tables] Rock Stars,[20] but they have to teach maths and that's how they've decided is a good way of teaching them. So, very little they do is with consent. (P12, local authority DPO)

The difference here is that EdTech products in themselves are often built in a way to maximise use of the data provided, whether for profit or to facilitate further research. **Although the services may be conventionally considered as non-consent-requiring,[21] schools are left in a situation where the use of products for genuine teaching purposes is providing data about the users – students – for profiling and potential commercial gain.**

Consider one commonly mentioned piece of software, Times Tables Rock Stars, maths software created by Maths Circle™. Figure 3 shows the data flows, as understood by participants and from looking at the publicly available information published by Maths Circle. Schools are able to contract directly with Maths Circle to gain access to Times Tables Rock Stars for their students, and using limited data about the student (name, email address, class or year information) to create a profile for them. Times Tables Rock Stars is accessed either through an app, or directly through a web browser. Its use generates further data associated with the student profile – information about usage of the platform, as well as details about the child's performance when using it. This information is then used in various ways – schools can use class-wide data to generate league tables, for example. But less clearly, data about the platform use will be collected

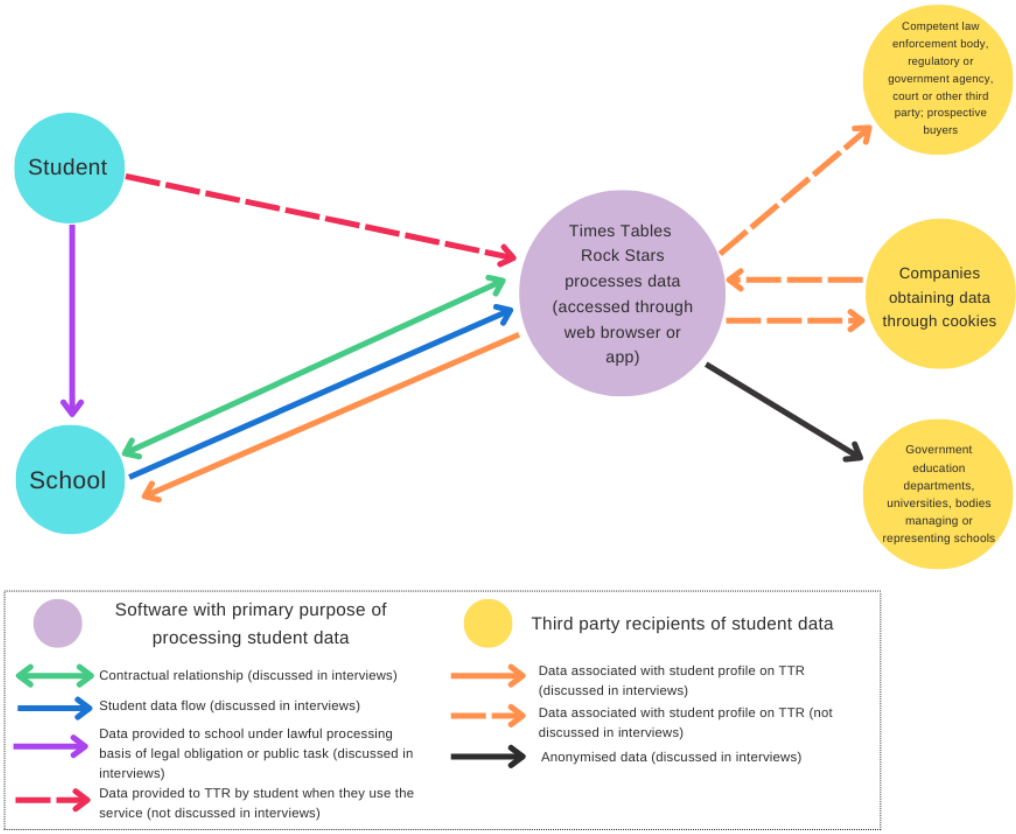
[19] For example, an IP address, details about the device being used and about progress through the system.

[20] https://ttrockstars.com

[21] To take the examples about to be discussed: Maths Circle (the creators of Times Tables Rock Stars) explain in their privacy policy (https://ttrockstars.com/page/privacy) that the data shared with third parties are completely anonymised and thus not personal data (which puts it out of the scope of the GDPR).

by cookies embedded in the platform. Data can also be shared – anonymised – with third parties for research, and, in extreme circumstances, shared with other parties.[22]

**Figure 3: How Times Tables Rock Stars appears to work from a school's perspective (and publicly available information)**




The sharing of anonymised data raised questions for our participants. Where schools have to provide data for the purposes of research through other channels, they are required to have an appropriate lawful basis to do so, as it is not considered part of their educational provision. P11, a MAT DPO, described how contacts at the DfE were unable to answer this question when asked about the National Tutoring Programme and the in-school COVID-19 testing process:

> ...the stuff that [the DfE] put out this time last year, to do with the testing and the tuition programme and stuff. It surprised me that it wasn't very competent. Because they wanted to share data with various different places for research,

[22] Maths Circle™ follows good practice in having a privacy notice for child users (http://mathscircle.com/wp-content/uploads/2021/09/kids-privacy-policyPDF.pdf). Within it, it explains that the data generated by users will be anonymised and shared with third parties for research: 'Sometimes we provide facts and figures about the use of our programmes to research organisations to help them understand how children like you learn maths. When this happens, we will never tell them who you are – they will just see the answers given to the maths questions.' It is taken on faith that the data here is truly anonymised, and we have no reason to believe that it is not. However, anonymisation of data has previously been shown to be hard to achieve (Rocher et al., 2019), and although it is entirely possible to use data that is anonymised effectively, stripping out all personal data may well serve to lose valuable research insights; it may also be easier to re-identify individuals than perhaps initially thought (AEDP-EDPS, 2021; Nottingham et al., 2022; Rinik, 2020).

> and we were asking them what [lawful] basis we could share the data on. And they were giving us the [lawful] basis for them to share the data. (P11, MAT DPO)

This underlines the complexity of the data ecosystem within a typical school. Data sent directly by a school to the government for research purposes require additional data protection considerations; the situation is not so clear if an online EdTech company may collect data to share with the government. The school may see the use of the tool as part of their teaching; the EdTech company may argue that either it is a 'legitimate interest' to share data or that it only shares anonymised data[23] – and so the child's data is shared with more parties with less data protection oversight.

Web-based services may also use cookies.[24] We know in everyday life that adults, who typically have the ability to consent, are subject to 'cookie fatigue' (Lomas, 2021), and so may click through and accept the use of cookies without fully reading the reasons for their use. While younger children are technically not able to consent to the processing of such data, in using products that use cookie technologies without the ability to thoroughly interrogate it, children will be taught that the cookie banner is something to be clicked through to get to the end product.

Participants with a teaching remit typically did not mention the use of cookies at all when being asked about data collection. In relation to a particular product, Seneca Learning,[25] P26 (a vice principal and school teacher) responded to the question 'Is there a cookie consent form?' with 'I've got no idea. I may have ticked the box saying I accept. I may not have done. I don't know.' When looking at the application of cookies on the Seneca Learning website,[26] it provides a very clear list of cookies used and why. Problematically, however, it does not allow a user to switch off these cookies directly, instead, telling the user that:

> Your web browser will allow you to manage your cookie preferences & to delete and disable Seneca cookies. You can take a look at the help section of your web browser or follow the links below to understand your options.

This means that unless the user is prepared to take the extra steps of managing the settings within their web browser, they will have no control over the collection of these pieces of data, contrary to the Age Appropriate Design Code's (AADC) Standards 1 and 7, the best interests of the child and default settings (high privacy by default), respectively.[27]

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[23] Again, the issue is that there is no clear explanation of the anonymisation process.

[24] Cookies do many and varied things: they are small pieces of code that collect specific pieces of data about the user when they are using the website in question, and can be used to inform about website use, or sold on to third parties. Not covered by the GDPR, but rather the Privacy and Electronic Communications Regulations (PECR) in the UK, there is a general requirement for explanation, and where necessary, explicit consent for the use of cookies when a user visits a website. Using the same concept of lawful basis for processing as the GDPR, this means that organisations using cookies on their websites or within their products may be able to determine that the collection of data falls within the legitimate interest basis, and so consent is not required to capture the personal data. However, in many cases, consent is explicitly asked for, suggesting that – if correctly applied – the data will be used for a purpose likely to result in a risk or to the rights and freedom of an individual, or be used for automated decision-making or profiling.

[25] https://senecalearning.com/en-GB

[26] https://senecalearning.com/en-GB/cookie-policy

[27] https://ico.org.uk/for-organisations/guide-to-data-protection/ico-codes-of-practice/age-appropriate-design-code

External DPOs recognised that this was an issue that was difficult to discuss, both with staff in school and with technology providers. Of in-school training, one external DPO said:

> The cookies are a classic, where people often click accept... But they will just click on accept to get rid of all these popups, so it is infuriating, it is annoying. (P9, external DPO)

**Products used in school that have an online component may well collect small, but possibly significant, pieces of data from students as they use the software. This data, collected when student users interact with the service for learning purposes, may serve to improve services (and reduce direct costs), but this will likely come at a cost of breaching the standards set out in the AADC, relating to the appropriate use of children's data, meaning it is unlikely that children's data will be processed in their best interests.** The breaching of these standards is particularly problematic when combined with the lack of knowledge teachers and schools have about the processing of these data. Without specialist knowledge, it is hard to unpick the processes going on with data behind the scenes.

# How schools approach their data protection obligations

## The risk- and intent-based approach of GDPR

Many DPOs highlighted the importance of the risk- and intent-based approach of the GDPR:

> ...one of the things that I go back to within the whole GDPR thing, it is the law says that you have to be accountable for your actions, doesn't mean to say you have to do everything right. It means that you've looked at things, you've assessed it, and then it says, as it's risk-based you are then taking what you'd perceive to be an appropriate risk. (P17, external DPO)

> The training I've been on for the DPOs and the general GDPR training is they seem to say that it's a lot about intent. So, as long as you've got good intent, or you can evidence why you've done something, and you haven't been overly negligent, then... (P1, school DPO)

This approach is clearly important for the proportionality of effort any school places on data protection. A safeguarding failure as a result of a data protection lapse is clearly within the remit of issues a school should be able to control. However, whether an EdTech company processes personal data inside or outside the UK or EU, for example, is something further outside their ability to comprehend or control, even though, as a possible data controller, the school (with other joint data controllers, if there are any) may still retain some responsibility should there be a breach affecting individuals whose data they process (UNDP, 2021).[28] Such risks further add complexity to the

[28] This can be problematic considering that children's data could be transferred to a country where data protection laws do not provide adequate protection, bringing potential data security risks and undermining children's rights to data

responsibilities schools are expected to manage, and increase the large burden that is placed on them 'to interpret the law, to choose which Learning EdTech tools are the best for their school, and to work out their own contractual terms' with EdTech companies (Day, 2021).

## Schools consider data protection primarily through a safeguarding lens

It is notable that the DfE's Data protection*: Toolkit for schools* suggests that DPOs 'link data protection to safeguarding children (and child protection)' (2018a, P11) as a way of getting teachers to value the importance of protecting personal data that they may handle within the school. This idea was common throughout the interviews:

> [Schools] had safeguarding in their minds, and so yes, safeguarding runs through schools like a stick of rock. I've never met a school that doesn't do safeguarding extremely well. [We worked] to get data protection embedded into the concept of safeguarding. (P16, local authority DPO)
>
> But you need to consider safeguarding and data protection in the same bag, because they are. (P13, school DPO)
>
> All schools have to do safeguarding training at the start of the year. As part of that, we do GDPR training. (P26, vice principal and school teacher)

Linking the two concepts is a valuable way of highlighting the importance of keeping processed data safe as well as reminding those processing it that, although data may seem insignificant to them, it can be important nonetheless: 'The child I know about was…five years old when all the information about him was put online. It wasn't even potentially that sensitive, it was imagery, class, location. That child was in hiding, that child was murdered' (P10, local authority DPO).

Considering data protection as part of safeguarding may minimise time spent on data-processing activities by companies that do not feel like traditional safeguarding matters. Personal data can still be processed through the use of websites or technologies with cookies embedded in them. A particular blind spot shown in the interviews was of those technologies that were free at the point of use. Many schools interviewed could talk about a robust procurement practice for products costing money or requiring a contract to be signed. Procurement processes discussed with almost all participants involved a data protection review – in particular, to understand whether a data protection impact assessment (DPIA) would be required.[29]

**However, technologies – in particular, services available online – that are free at the point of use may not be taken through such a procurement process, as access is so easy that little thought may be given to the uses of the data. These data, while not necessarily as explicitly risky as publishing photographs of looked-after children, for**

protection and privacy. See https://rm.coe.int/t-pd-2019-6bisrev5-eng-guidelines-education-setting-plenary-clean-2790/1680a07f2b

[29] DPIAs are required, under UK GDPR Article 35(1), DPA 2018 s64, when a type of processing is likely to result in a high risk to the rights and freedoms of individuals.

**example, may allow third parties to build up data profiles in a commercially exploitative way that is increasingly being normalised.**

## Difficulties in procurement and contracts with EdTech

The lack of capacity that schools have, realistically, to manage data flow when using commercial systems is highlighted in two parts of the standard procurement process: contract alteration and the performance of DPIAs.

When talking to senior leadership team members about the process of negotiating contract terms when purchasing a new product, it is usually the case that for more standard terms – perhaps around costs associated with a product or length of contract term – schools may ask for alterations where the proposed terms do not suit them.

However, negotiations about data provided as part of a service were rarely discussed, even though in these contracts the service provider typically provides a standard contract for the user to agree to. That contract may well state that the provider is the processor, and thus, technically, is acting solely as instructed by the controller (the school), although the school may not be able to negotiate this contract, and these activities, in any meaningful way.

**Participants expressed concern about the complexity of the law, and the levels of responsibility it places on schools, rather than the EdTech companies, when it comes to data protection:**

> [Times Tables Rock Stars] is a good example, so they say we're just the processor. But then they have this thing where they say we use the data for what we want, including they'll give it to the government or use it for research purposes. And you get this feeling that the schools aren't the one with the power, because they're under pressure to deliver educational provision, particularly in the pandemic. (P16, local authority DPO)

P16 here refers to the terms of the contract that schools have to agree to, where Maths Circle states it is the data processor, with the school remaining the data controller.[30] And so there is a tension, as schools as the data controller retain responsibility if something should go wrong with data processed or shared by Maths Circle.

External DPO services will often be able to provide schools with more nuanced advice about adding data-processing schedules to contracts, but it is not clear whether these schedules are adhered to:

> Most of them will say sign up to our terms and conditions. So, we are trying to get the message across that if you're going to do that, in order to be compliant [with GDPR] you need to make sure that the terms and conditions cover everything in the contract schedule. If it does, fine, go for it. If it doesn't, you should really send them the contract schedule [that the local authority has put together]. There's a little bit of resistance both ways…if the terms and conditions don't [cover] everything, send them the contract schedule but say, here's our

[30] Available at https://ttrockstars.com/page/Terms_and_Conditions; data processors are required to process personal data on behalf of data controllers – typically processing explicitly in ways determined by the data controller.

> contract schedule. We will assume that you are signing up to that. (P12, local authority DPO)

Schools using external DPO services may also benefit from the repeated work that these services will do in executing DPIAs. Rather than each school starting from scratch, these services will often be able to provide templates, or details pertinent to the filling in of such forms – in particular where there are risks that may require mitigation. External DPO services can also facilitate retrospective DPIAs in a way that a school with an in-house DPO just cannot justify:

> ...what we will do is we will help that school to carry out DPIAs for new providers. And we do carry out retrospective DPIA on the providers that they're already using...sometimes we can tease things out. (P16, local authority DPO)

> ...a lot of [schools] don't know how to fill in a DPIA, so we'll try and work it out and try and work out from the websites of these various systems etc. what the answers are and all that kind of stuff as well. (P12, local authority DPO)

> Now, what infuriates me, because it's poor use of time, is that the bottom layer, the schools, have to do a DPIA for each piece of software that they purchase... And now I haven't done all of this stuff, I just haven't, I don't have time. So, the DPIAs are delegated to the people that are buying the software. Why isn't it something that the people who are selling the software do? (P13, school DPO and former teacher)

**In situations where there are simply not the resources to produce a comprehensive DPIA without significant investigation, schools can fall back on two claims: there is safety in numbers; and there are vanishingly few instances of schools being sanctioned by the Information Commissioner's Office (ICO) for data protection breaches.**

> ... you do know that there's 11,000 other schools that are using that product, then you have taken an appropriate and accountable action' [P17, external DPO]),

## Knowing (or not) which EdTech is used and the risks

A software inventory should be integral to the management of technology solutions used within a school as a standard part of responsible asset management. Keeping an up-to-date inventory allows for easy analysis of the entire ecosystem of software within the school – which can serve as a starting point for mapping data being processed throughout the school, as well as having practical purposes such as allowing for rationalisation of similar products and reviews of costs relative to use.

Many participants recognised that their school's software inventories could do with being updated, as it was a constant activity that was rarely allocated sufficient resources to do, despite it being a key aspect of managing the privacy transparency obligations that a school has to its students, parents and staff (DfE, 2021). Further, DPOs interviewed assumed that schools would lack inventories that document the free services used by teachers for educational purposes:

> Free apps, as I said, with a software inventory... We get a list of them on those, headteachers are often not aware that the data's been put into them. And, certainly, during the pandemic, that was a huge issue. Teachers were going on to

> forums, hearing about the latest thing that was useful. And out of expediency really, they're uploading data relating to pupils. (P10, local authority DPO)

**Concerns over the use of software that is free at the point of use (which is typically monetised in other ways, often involving the reuse of data) are not evident from the government. Albeit at a time of emergency, the DfE's push to promote Google Classroom was done, in the eyes of the data protection professionals interviewed, without regard to data protection in stark contrast to actions taken by at least one other European government at the time (Privacy Company, 2022):**

> Google Classroom was interesting, especially if you went with the Department of Education's set-up one because that had inherent flaws. (P28, external DPO)

> The DfE have provided... It was at the start of the pandemic. So, again, it was a bit shoot from the hip. It was reactionary. Basically, the bottom line is everyone needs Google as an online, remote strategy for the pandemic. And so, it was very reactionary to the pandemic... (P29, local authority IT and computing lead)

Furthermore, there were cases where, despite having concerns about aspects of data protection, participants stated that they would use products knowing that they could argue that the DfE had promoted them:

> There is a big trust element because anyone could make a really nice-looking data protection policy and put it on their website... And their connections with the DfE is always very reassuring... If something does go wrong and it's on us, we can say, well, this was DfE-recommended as well as we've done everything we can. Maybe there's shared responsibility if the DfE are recommending and they're confident that this company can use our data. (P20, head of school)

## Difficulties of responsibility for oversight

The oversight of data protection falls between the remit of two organisations, the DfE and the ICO. The DfE put out *Data protection: Toolkit for schools* in August 2018, ostensibly as a living document (it is referred to as an 'open beta'), but there have been no updates to date: 'sometimes I've referred to it, but it's stale. It's not a live thing that you can refer to. It doesn't have their latest stuff' (P11, MAT DPO).

The consensus among participants was that the ICO's remit is too broad, and that it doesn't have sufficient institutional knowledge to support the education sector appropriately: 'that's the gap that ICO don't have at the moment. So, when they're talking about things around children's data, it's done without even understanding the core activities across the schools. And if you don't know what the core activities are of a public authority, how can you say what's the task, legal obligation and so on?' (P15, external DPO). And that is aside from considering the significant constraints that the ICO has in performing enforcement activities: 'I have a pretty good relationship with [the ICO], it's got worse lately because I'm getting complaints which were sent six months ago...they're just shifting stuff onwards...They had a 400,000-email-backlog (P28, external DPO).

**This lack of comprehensive guidance leaves schools without a fundamental understanding of how to manage EdTech providers' data practices, and so appears not to be treated as an important consideration when introduced into schools.** Our participants suggested that educational software is often recommended through word of

mouth, or, more formally, through discussions with salespeople: 'When we looked for a new platform, we went out and spoke to other schools, and we had presentations from those commercial platforms, all of whom sent their very articulate salespeople to the school, and we listened to their presentations' (P20, head of school).[31]

In recent years, a core feature of the government's EdTech Demonstrator Programme has allowed schools to connect with each other to learn about possible technological solutions, promoting a 'train the trainer' approach, which allows staff to be trained in specific technologies (typically associated with a core manufacturer), with the idea that with their knowledge they will be able to go on to train staff in their own, and other, schools.[32] The model of empowering schools to pick from a marketplace of potential solutions based on their own knowledge could be an effective way to disseminate knowledge and force improvement of successful technologies – but has the potential to diminish the importance of data protection considerations further in the process.

**Implementing a free marketplace without a minimum standard for acceptable features, data practices and evidence-based benefits will surely distort power relationships. In the case of data protection, this may see the normalisation of data practices around reuse, profiling and selling, in instances where transparency around the practices may be hard to come by, simply because the burden of understanding and objecting to data-processing practices is placed on the user – in this case, on the school.**

## Students and parents: the missing part of the puzzle

**The knowledge students are given, as part of their education, and also as a data subject in school, was often portrayed by participants as minimal. Some referred to the fact that students may be briefly informed of their rights around data when they join the school, for example, but that they are not actively taught about them:**

> There's some things that we keep quiet a little bit. A student does have a right to say I do not want any of my progress data or attendance data to be sent home to my parents. I do not want any concerns about my behaviour or any aspect of my time at college to be communicated to my parents without my permission. But we don't publicise that they have that right. (P2, former headteacher)

Nottingham et al. (2022) recommend that students be given more knowledge and agency in being able to assert their right to object around the processing of their data. A fundamental starting point for this would be to increase students' awareness of their rights. External DPO services may be a reasonable place for schools to ask for help to do this. Indeed, some of those interviewed referred to work they had done to produce templates for child-friendly privacy notices to be put on school websites, if requested. Another commented, 'One of the things we do offer to schools, although no one actually

[31] This is backed up in the 2020–21 EdTech Survey commissioned by the DfE; teachers, in particular, are reported to consider peer word of mouth as the number one means of sourcing recommendations (CooperGibson Research, 2021).

[32] https://edtechdemo.ucst.uk – although it is important to note that government funding for this scheme will cease as of the end of the 2021–22 academic year.

really takes it up, is that when we go and give a presentation, we think we should give it to the kids' (P17, external DPO).[33]

Parents, too, have personal data held about them in school systems. One DPO pointed out that the requests to share an entire school's worth of data for the purpose of using data about a handful is not just an oversharing of child data being sent, but parents' sensitive data too:

> Actually what you've got to balance is that to share that three or four pupils' data across in this way, you're actually exposing 130-odd other pupils' data, it's their parents', because there's parent data as well on there, to these potential risks. (P9, external DPO)

Parents were painted in the interviews as having a complicated relationship with the schools interviewed in terms of data protection. Often parents will ask for things that are not appropriate:

> We had a few instances where schools were being challenged by parents who were saying, 'oh, we don't want you to use Google products'...we argued the point that the lawful basis for which we were operating was we had to teach children, so it wasn't a case of consent. (P17, external DPO)

Or they may not understand that, after the age of 13, the data are the child's to exercise rights over:

> I think, the biggest challenge we come across, and I don't know if it's because we're a college, is, we seem to have this difficulty around data. That it's the student's data, that it's yours. So, we might have a parent come to us and say, 'I would like all of my child's data erased' or 'I would like access...' And actually, it's not your data. (P1, school DPO)

And yet, as pointed out by P29 (a local authority IT and computing lead) parents should be schools' greatest allies in helping children navigate both the technological, and also the data protection, landscape:

> ...if a parent is involved...then your child will do well... But... It's about the parent using it with the child and talking to them. How do you use technology with your child? There's been nothing on that. (P29, local authority IT and computing lead)

**It is no surprise that people struggle to comprehend the complexities of digital technology usage. But what is apparent is the fundamental lack of understanding of, and access to learning about, the way that data are used may well have longer term implications for personal control over one's data. The lack of control contributes to power imbalances between EdTech providers and users and bears the risk of undermining children's rights to data protection and privacy. This power imbalance**

[33] Research has shown that, much like the general population, teachers are not sufficiently aware of the data capture and potential exploitation of digital technologies to facilitate, as Vartiainen et al. (2022, P1) call 'agentic actions in a data-driven society'– namely, without further support and learning both for teachers and students, the collection of personal data will remain unquestioned and not understood during the process of education (Lupton, 2021; Marín et al., 2021; Nottingham et al., 2022). The DfE-sponsored 2020–21 EdTech Survey suggested that older teachers in particular would benefit from enhanced learning about the potential technologies that can be used in the classroom (CooperGibson Research, 2021); arguably data protection awareness should also be part of such training.

**between EdTech providers and users clearly manifests in terms of contracts that schools sign with EdTech providers.**

# School views on beneficial education data

**When asked about the benefits of using digital technologies in school for educational and attainment purposes, teachers and school staff presented modest examples, typically reflecting the view that use of a technology on its own adds very little without the skill of the teacher knowing when and how to deploy the technology for teaching or to interpret the data made available to them.**

**The benefits of education data were seen to include: having more data, which, with appropriate analytics tools and skills could provide evidence-based insights about students' performance; more opportunities to monitor students in the school setting; and efficiencies for staff, students and parents through the use of digital technologies.**

## More and better curated data

Teachers and senior leaders were keen to point out examples of where analysis of data collected about different aspects of the student's life within school had produced more nuanced insights than simply using a teacher's gut feeling or similar. This was particularly the case when aggregated with data from similar schools to provide a comparison:

> ...we got quite a lot of interviews [at universities] compared with some but then we got fewer offers from interview...we needed to work on interview technique... And we couldn't tell that just by looking at our own data, but we could by comparing it with other top sixth form colleges. (P2, former headteacher)

> ...we can draw learning data together, we can measure that against protected characteristics, so I now know who my highest performing group of students in the school is. I know where my disadvantaged students are, and I can target intervention on them. Whereas before, it was a lot of gut feeling, a lot of subjective information. (P20, head of school)

> The markers were telling us that their performance in extended writing GCSEs were probably the most valuable bits of data we could look at to prophesy their performance in media. (P24, head of department and teacher)

> ...some of these bits of software have been quite good at it, where they present something in the context of a chances graph. Given where you are now, no pupil in your position has ever gone on to do X, most go on to do this, some go on to do that. Now that's quite helpful. (P25, headteacher and union leader]

These responses suggest that insights drawn from the use of education data are mainly about students' academic performance rather than their broader wellbeing or potential academic path. It is also clear that the intended user of this data is the school, via the teacher: a teacher is expected to use the data to intervene with the student based on generalised models of attainment, even, as in the last quote, where the data is being used to facilitate key life decisions such as university applications. Students are not

expected to access this data, or to analyse and act on it as they see fit – which may, in some cases, be an outcome more aligned with the best interests of the child.

**As it stands, two key aspects are vital yet often lacking if the value of education data is to be realised: the ability of staff to manipulate the data appropriately, and their critical knowledge that data provide only indicative information that requires further detailed, often sensitive, investigation to ensure that the child's wellbeing is considered as well as performance.**

Those who discussed the use of attainment data did not refer to a single solution that did the analysis for them. Most referred to a process of collating manually input data in a single system, usually the MIS, and then, when needed, exporting the collected data again to manipulate it manually. Such a manual process requires knowledge, time and aptitude for doing it sufficiently competently:

> If they know what they're doing when they're putting in the data, then the analytics is great. Again, especially with primary schools, they're not great with true stats. So, they can see X is higher than Y but they don't always look at why X is higher than Y. And if there are any competing factors which are influencing it…if you don't have a science graduate in the year, who's happy to [be a de facto] data lead [it is difficult to achieve]. (P28, external DPO)

## Data to understand children's needs

Teachers pointed out how useful data could be when combined with the nuance that they could then put on top of the data, based on their own experience of the child, and their understanding of what type of intervention may subsequently work:

> We're constantly giving assessments, collecting data, looking at their overall performance…looking at students [where] there's a big discrepancy between their target grades and their actual performance… The last time I had a conversation with my senior leader about them, they said, well, why don't we see if we can get a mentor for this person…[they] now have an academic mentor, a [local] university student. (P24, head of department and teacher]

> …when I first came to the [school], we would say 'What is the performance of our children in this subject?'… 'We don't know…because it's on a piece of paper in a filing cabinet', and you couldn't draw things together…[now] we can draw learning data together, we can measure that against protected characteristics… I know where my disadvantaged students are and I can target intervention on them…before, it was a lot of gut feeling, a lot of subjective information… I suppose it's the manipulation of the data that's become easier. Children's learning hasn't changed…but we've got information and we can cross-reference it with other things. (P20, head of school)

These quotes suggest that data are used as a means of furthering conversation and exploring possible means of intervention, not as an end in itself. It is vital to keep a human in the loop, especially in the context of technology solutions that generate results

or scores algorithmically.[34] The nuance that comes with knowing a child, or that recognises the importance of factors other than academic attainment, is vital to the use of the data in the child's best interests:

> We use the level three value-added analysis things that the government produces to generate target grades…we can see how far students are from the target grade and that gives us an underachiever profile. Sometimes students unexpectedly get on that list, and so you want to know why. That usually means something's going on their life that they're finding pretty hard. So, it's an amazing indicator for problems that students face. And obviously, an act of underachievement's a problem in itself, but it can also be used to highlight changes. (P26, vice principal and school teacher)

> The collection and use of quantitative data to look at how pupils are doing is something that should be done, but it shouldn't be done in isolation of all those other things that need to be considered… (P5, chair of governors)

> …you can never know everything about everybody. And there will always be children who are hiding something because their families have said, don't tell. Or because they're ashamed or embarrassed. And data can be used to browbeat as well as to benefit, and I think we're in that grey area. We may forever be in that grey area. (P13, school DPO and former teacher)

> I think what we as teachers sometimes forget is actually that students aren't just getting this pressure from one place with us. In my school, I know some teachers are driving them all to get A stars and As. And that actually, that they feel really inadequate as a result of that. I was having a conversation with a student yesterday who was almost feeling bullied by it. (P24, head of department and teacher)

Data collected about a student's behaviour were also seen to help pinpoint where things were clearly failing, from the school's point of view. A product manager and former teacher (P32) described how the tracking of behaviour was highlighted as a fundamental part of turning around the fortunes of a school that had been placed into special measures by Ofsted:[35]

> [Analysis helped us to determine] who were the students that were causing the most difficulties and why they were causing the most difficulties…it was more restorative to understand why students were…causing problems. There was a historic issue of a lot of students weren't going through SEN processing, so we were able to identify a lot of students that actually needed SEN support… Also, it was to see where difficult areas were… So, you used it to see where those

[34] As recently pointed out as a concern by the Digital Regulation Cooperation Forum, those individuals who are charged with using this data must feel empowered and confident enough in their understanding of the data and their school not to succumb to algorithmic bias – namely, assuming that because the data shows a particular result, it must be right (Digital Regulation Cooperation Forum, 2022). The unchecked use of algorithmic outcomes is considered to be 'inherently problematic and there are risks attached to it', since it personalises differences between children as groups, and therefore bears the risk of exacerbating social injustices, as treating vulnerable data subjects as a group based on data processed can lead to stigmatisation (Livingstone et al., 2021; Malgieri & González Fuster, 2021; Malgieri & Niklas, 2020).

[35] Where a school is deemed to be 'inadequate' on the basis of their Ofsted review, requiring additional monitoring and support.

> difficult classes were and was it in a particular group of students that were in a group or class that should be moved around. Was it the teacher? Were they having difficulties in supporting them as well? (P32, product manager and former teacher)

More invasive monitoring was considered beneficial in a few – typically safeguarding – cases. Participants typically recalled instances where a particular trigger could be a call for further investigation into a student's digital activities within the school network or infrastructure. During the pandemic, the ability to check how long students were logging into their learning environments – if at all – was used as a metric to trigger safeguarding concerns within many schools. Other schools mentioned software designed to look out for the use of certain keywords, typed on devices on the school network, to monitor, again, for safeguarding concerns, but also to help manage a school's Prevent Duty (Home Office, 2021):

> There's ways that they can interact with other people in their class online. Part of the benefit of it is that it's all regulated within the school environment. If some kid's searching for suicide or something, that gets flagged up... (P11, MAT DPO)

> Every single digital thing the student does on a school [device] is recorded... Every keystroke is recorded...we know what they're looking at. We can monitor what they're watching online, what they're typing in a Word document, what's on their screen. (P20, head of school)

**Although this can be invasive technology, the argument is that it can offer a valid and effective way of keeping both students and staff safe while in the school's care. But this requires rigorous access, management and transparency of use policies:**

> I've gone into some network managers' offices when they've had 30, 40 screens in tiles on it, they can watch everything that's going on. I've raised this with more headteachers than I can shake a stick at, because if somebody's watching that screen and you're not aware of it and you're typing that confidential email, you're looking at that confidential data, it's not secure at all. That needs addressing, the monitoring of school systems and individual systems, it's too ambiguous and it's a massive issue...they understand they need it, and they're supposed to monitor, but they don't really understand what they're monitoring for. And I've seen some fantastic work done [elsewhere]. And that has seen, actually, a staff member safe from suicide, and young people safe from self-harm. So there [are] benefits...it's a problem because the school know they have to have it, and if they challenge an IT manager who might be using it in that way, they could be told, well, I'm monitoring under that guidance. (P10, local authority DPO)

## Technology can make teaching more efficient

Some teachers noted that using technology – once everyone required to use the technology had mastery of the product or products to be used – could produce a more efficient and joined-up learning experience.[36] For example, in quantitative subjects, the

[36] Research shows that efficiency of the EdTech products can differ depending on 'whether technology is in the hands of teachers or students' (Bryant et al., 2020). To get the most out of EdTech, an understanding of how to use it is needed.

use of quiz-based products, and forms, were highlighted as a quick, often enjoyable, way of being able to check cognition and recall among students:

> Where the technology really supported me, and something I've taken away from lockdown is the use of…quizzes. We…test students on knowledge that they may have learnt two years ago. I can build up a picture via those quizzes of where the gaps are, and that enables me to tailor [teaching to] those gaps. In that respect, it has supported greatly the ability to improve our game in the classroom. It's just quicker feedback and you can hold that information together in one place. We can produce graphs, charts, all sorts of things, so it's quite useful for that. (P20, head of school)

**More muted, although still occasionally mentioned, was the ability for technology to allow for some level of differentiation and wider perspectives when actually teaching children. Yet it was pointed out that personalised learning of a topic – where students learn at different speeds depending on their aptitude – is extremely difficult to manage within a classroom, although easier to negotiate when learning remotely.**

Indeed, the additional value of creating forms or quizzes – or indeed, using an online system for setting homework problems covering a particular area – is often more a matter of potential than actual reduction in teacher workload, although instances were noted where use of EdTech could reduce the volume of marking while allowing students to receive graded work, which can help with their motivation. Having homework set online can improve the chances that it will be completed,[37] as it cannot be misplaced in the way that paper could be:

> Those are the three reasons we try and do it. One, to maximise homework completion. Two, the results. And then the three, teacher workload. (P22, assistant head and school teacher)

> …the assignment functions, where you can put homework and you can see exactly who has and has not submitted their homework really quickly and easily. (P26, vice principal and school teacher)

> We're setting assignments in [learning environment] with hand-ins and dates that they've got to achieve work by. The [learning environment] will then convert that material into a spreadsheet for us, so they'll tell us when they've done that. (P24, head of department and teacher)

Some participants suggested that, post-pandemic, the ability to retain a connection between home and school has been beneficial for understanding parental engagement. Some learning environments provide not only student-facing portals but also parent portals, giving parents and schools an insight into children's learning:

> We [have] basically got eight primary schools… We've got some schools that are in reasonably affluent areas. We've got some schools that are the complete polar opposite…it'll vary in terms of the amount of access to technology some parents have. (P8, MAT DPO and data analyst)

[37] Assuming a home environment where students have adequate access to devices and the internet for accessing homework online.

**Again, any additional level of engagement comes at a cost of data being collected not only about the child, but also the parent, both in terms of the school monitoring their engagement and other personal data that may be collected by the software.**

# School views on problems of education data

In the interviews the problems associated with using education data in children's best interests were more prominent than the benefits. This comes down to the fact that the benefits touted by EdTech companies are simply not there – or not there yet. This is a core concern when the promise of data to improve performance and digital tools used in education is promoted. **While there are clearly some benefits, the technology typically does not generate data that solely illuminate or inform educational decisions. It is used for a host of other purposes, not all of them apparent to the school, and with fewer discernible benefits.**

Identifying the benefits and improved outcomes can be challenging, especially when the promised benefits are long-term or for the public good rather than individual students whose data are collected (Livingstone et al., 2021). Using personalised lessons is impractical in class – even where true personalisation exists. Technology frequently underperforms in its outputs. What is most problematic is that the infrastructure underpinning EdTech in schools in England is widely variable, with significant gaps that make even basic provision complex. No wonder that participants are concerned that processed data are underused, despite being collected and stored. DPOs worry that the lack of a regulated or even a monitored EdTech ecosystem leads to worse outcomes for students, as the data are taken without the promised benefits possibly being realised.

## Benefits are not discernible or not in children's best interests

Fundamentally, the benefits ascribed to technology that came out of the interviews prioritised efficiency and were not always in children's best interests. Use of EdTech can make processes, such as homework, quicker to set, certain elements can be automatically marked, and online homework cannot be lost the same way a book or sheet of paper can. Yet few participants discussed benefits in terms of true personalisation of learning, automation of analysis or teaching or in-depth analysis of wide datasets. In fact, concerns were raised, in many different ways, about the narrow nature of technology: that is to say, it has been seen countless times before that technology, and the algorithms underpinning that technology in particular, can work well for certain groups of people – disproportionately, the white middle class – yet much more poorly for anyone not fitting that particular group. It is important not to talk about children as a homogeneous group, as what may be a benefit to some may be a risk to others (Livingstone et al., 2021).

This can be felt in many ways. One school governor worried that it was impossible to tell the extent to which 'the kind of resources that are developed are ones which are able to be used in lots of different scenarios and environments. Not ones that have been developed purely in an environment that's for a middle-class suburb with a nice well-

performing school that has all of the best kids and no one on SEND, no one who is EAL [English as an Additional Language]. It's that that's the problem' (P5, chair of governors).

None of the schools interviewed mentioned being involved in the development of the technologies that they subsequently use. This may be a small sample of schools, but there was a very strong understanding among participants that schools are far from being a monolith. P10, a data protection specialist for a local authority, points out that a small, single form entry village school will not need the same type of safeguarding software that a multi-site inner-city school may need, for example – although the same type of software may be marketed to both: 'So, for example, what we try and teach…is that software that's useful for one school could be a make-or-break for them, but might not be for another.' P30, a headteacher of a special school, described the difficulties that they faced with assistive technologies – they are simply not personalised enough to be of value to all the students in the school:

> Even now, we've been testing out some of the reading pens because you can use those in exams now which is great, but they still require you to be able to track the line of your book quite skilfully, which, if you go like this [mimics pen being dragged inconsistently above and below a line], it doesn't [work]… And I guess that's a piece of work with the tech companies who think they're doing a great job… (P30, headteacher)

A lack of understanding of the 'micropolitical factors within education that determine what the outcomes will be' (P5, chair of governors) leads to ineffective technological solutions. This is a far from simple problem to solve, but solutions being sold as suitable for all when they are not leads to inefficiencies and cost implications. P20, a head of school, commented that 'one of the things we're using…it doesn't do as well as we want it to, does it? Another platform [that] doesn't quite meet our expectations because it's very labour-intensive.' In particular, in a competitive, commercial market, there is no incentive for providers to ensure that software is being used appropriately – or even at all – leading, again, to potential cost and data-sharing implications for schools:

> I find that schools don't actually know what it is that they're being sold. They just have this belief that it's necessary…and therefore they go along with it. So, I have had schools who have actually had multiple systems, and they all trip over each other, or they do the same function, but they don't fully grasp it. (P9, external DPO)

**A system that is stretched to capacity in terms of the numbers of hours staff work, alongside the lack of uniform technical understanding among those staff, and a lack of standardisation of data and systems within a school, leads to a series of workarounds, manual interventions and, potentially, underused resources:**

> We've been working on [getting homework online] for years. And I bet there are multiple schools that will tell you the same thing. So, if we can get something working, then that's where we're going at the moment… It works well in some areas, and we're trying to really work out why it works well in those areas. (P22, assistant head and school teacher)
>
> There are multiple platforms, but there's never one that does everything that you want it to do. And also, the format in which the government or various agencies

> that hold us to account [should use a] standardised system. (P21, DPO and school teacher)
>
> I have some schools who had an MIS they got three years ago, and they've only just started discovering what the actual benefits and applications are. (P28, external DPO)
>
> [Teacher] said one day, I have entered…six or seven classes' worth of data for Year 7…that's probably about 160 kids' worth of data…And there will be five things that she's had to enter for each child. That's a lot of data. She might not have had to type a comment in, but the possibility for getting it wrong, massive. (P13, DPO and former teacher)

This is before even considering the aspect of validation of technology providing educational outcomes. Very few pieces of commonly used EdTech provide strong evaluative evidence as to their pedagogical value through, for example, randomised control trials to show enhanced learning as a result of use of the product, meaning that it is extremely hard for schools to evidence the value that may be garnered through the use of any one particular piece of software (Hamer & Smith, 2021; van Nostrand et al., 2022). Being able to understand the expected outcome of using a particular piece of technology before introducing it is the first step in the Educational Endowment Foundation's *Using digital technology to improve learning: Guidance report* (Stringer et al., 2019), yet this is an incredibly complex process, with limited information for those undertaking the assessment:

> The testing procedure takes so long, and there's such a time commitment and staff commitment to properly test each system. You're sometimes going by word of mouth and recommendation, and you don't find out until further down the line that maybe this isn't quite as good as we thought. (P21, DPO and school teacher)
>
> There are so many variables, there is no way that you could put your finger on it and say, oh, yes, we went up two points in our A stars. It's got to be because we introduced [learning environment]. You just can't evaluate that kind of thing. (P27, chair of governors)

Although there will never be a 'one-size-fits-all' solution, some participants called for greater support to help schools understand the right technology for them:

> The current situation is not well regulated. There are few incentives for the private sector to work collaboratively around a sense of common purpose in terms of improving education. I'm sure that all EdTech companies will say that that's what they're trying to do, but they're also trying to make a profit. Those two things are often incompatible with one another, so there has to be a regulator or another body that's able to help to push those two things together and make sure that there's purpose around the profit. (P5, chair of governors)

**Given the limited capacity for schools to act in the ecosystem, the logic of consumer empowerment – letting consumer choices inform the market – and the expectation that consumer choices would drive up the quality of the product are unrealistic. Aside from the lack of engagement reported between schools and EdTech companies, there is often simply not the time to find a perfect system, so schools adapt – and**

**end up half-using systems in ways that may be time-consuming, or only in some areas, or other ways that do not necessarily reflect meaningful improvements.**

## Varying and (often) unreliable digital infrastructure and resources

A core concern for most participants was the simple fact that even if they were fully supportive of a school full of EdTech, the funding and infrastructure to make that a reality is absent. Participants consistently referred to having insufficient funding or reserves to consider implementing technological solutions in ways that might really benefit students, with those who did have more reserves to do so considering themselves 'lucky' (P22, assistant head and school teacher) to be able to afford access technologies they considered necessary:

> The school structures [aren't] set up for students to be able to work on tech. The budgeting for that doesn't exist in my school. You've got such difference in what is paid per pupil across the country. (P13, DPO and former teacher)

> It's about value add...we'd love to afford to be able to pay for everything out there, having fantastic whizzy integrated [systems], but we don't have the money. Our finances are crazily tight. We spend more governance time on looking at our finances...than anything else right now, which is so frustrating. (P27, chair of governors)

Other participants talked of using funding provided on the basis of numbers of free school meals to improve technologies in school – including ensuring that the poorest students have devices to be able to learn:

> A lot of the money that we spend [on technology] comes out of pupil premium. (P5, chair of governors)

> ...we expect all of our students to have access to technology at all times, and if they can't afford it themselves, we do have a government pot that we can use to buy them. (P26, vice principal and school teacher)

> ...we'd used pupil premium resources to help fund [devices for students], we saw that as an almost first step, after you've attended to kids who haven't got clothes, or a fridge, or whatever... (P25, headteacher and union leader)

More generally, however, participants painted a picture of old school buildings without the capacity to withstand mass device use:

> We haven't even got enough plugs in the classroom. We're working in a building that's nearly 70 years old. (P13, DPO and former teacher)

> ...[in a discussion about online exam taking] I'm just thinking of our sports hall. It's six power sockets, 200 laptops, and I'm thinking, what on earth? (P14, data analyst and school governor)

Participants also recognised that the performative aspects of technology purchases may well appeal more to those with spending authority, as it is easier to evidence an attempt to improve learning outcomes with a learning app compared to updating the school's Wi-Fi provision, for example:

> It is much nicer to give a child an iPad access than it is to tell them that you've got upgraded the Wi-Fi…than it is to put a solid infrastructure in [for] routers. (P10, local authority DPO)

> …previously I worked in a school that didn't have any Wi-Fi… I spent about a year trying to convince the headteacher that this is a need. And it was just impossible. I actually left because they couldn't make a decision…then they decided against it because of funding. And they had the money, they decided to spend it on…a classroom that wasn't even needed. (P32, product manager and former teacher)

Recent publication of standards around the type of internet connection that schools and colleges should expect to have as a minimum by the DfE (2022a) shows that this is clearly an area of concern for the government. However, funding for achieving this aim will be limited to those schools in areas predefined in the Levelling Up White Paper (Department for Levelling Up, Housing and Communities, 2022), potentially meaning that many schools will continue to need to bear these costs themselves (DfE & DCMS, 2022). **With well over half of teachers and headteachers citing the quality of wireless and/or broadband connectivity in school being a barrier (whether small or big) to using technology within school in the 2020–21 EdTech Survey (CooperGibson Research, 2021), this is not an issue that will go away without significant support.**

## Patchy access to and security of digital devices at school and at home

Many of the participants discussed the need to find devices during the early stages of the pandemic to facilitate remote learning for students who could not reliably, or at all, access a device – or internet connection – to perform their learning:

> …there's still a real difference…in terms of wealth and not wealth, and access to technology at school level, as well as at home level. (P19, external DPO)

Ofcom[38] found in its *Children and parents: Media use and attitudes report 2022* that although 99% of children aged 3–17 went online in 2021, more than a third of primary school-age children (36%) and 17% of secondary school-age children did not always have access to a suitable device for schoolwork or online learning. Ninety-four per cent of teachers surveyed in the 2020–21 EdTech Survey cited 'availability of technology in pupil's homes' as a barrier (and 61% of those as a big barrier) to using technology for educational purposes (CooperGibson Research, 2021).

The government facilitated a free laptop scheme for eligible children in April 2020, providing 200,000 devices and 50,000 4G routers (Children's Commissioner for England, 2020). As there were an estimated 540,000 children eligible for the scheme, schools may well have found themselves needing to find devices where the scheme could not help. For instance, one interviewed school 'invested £100,000 in little Android tablets' (P23, DPO and head of IT) to ensure children had access during periods of lockdown – £100,000 is a sum of money that many schools may not have access to, and the underfunding of the free laptop scheme again suggests that schools may be on their own to figure out how to fund it:

[38] The UK's regulator for communication services.

> I don't think government has engaged enough on the monetary impact on schools, and how they delegate IT, because really, it's up to a school how they spend its money, I get that. But some schools are really going to miss the boat, technologically, unless, I think, it's monitored more carefully how the money's spent. And actually, if we do say that every child should have right to access to a computer all the time, then we need to put our money where our mouth is… (P19, external DPO)

Coming out of the periods of lockdown, participants were starting to wonder what might happen to these devices in the future. The cost of being fully digital is more than just finding devices – it is maintaining them. As P19 continued:

> And that is not just the computers, but it's the IT support, it's all that, the repairs, the maintenance, the development. It's a huge piece of work and money. (P19, external DPO)

Participants described how laptops provided through the government scheme had an uncertain future:

> It came with free software…to manage it. And then now the DfE are ending that, it means, what do we do with these laptops? If we image them in such a way…they have to come back into the school regularly. Do we say to the kids, you have a laptop, but then you have to come back in periodically to be able to use it? Logistically, it's very difficult… (P8, MAT DPO and data analyst)

DPOs were also aware that old devices could cause security risks if they were not properly maintained or supported with security updates – as well as having significant amounts of data on them:

> I suppose from a data protection point of view and just from a technology point of view, is what are those devices being used for now? Are they all in a cupboard at home? Or in school? Are they actually being used? (P19, external DPO)

However, the schools interviewed often had a lack of resources to even consider ensuring security of devices a high priority activity:

> When I said that every laptop in the school, every laptop that a teacher used, had to have encryption on the hard drive…the tech department basically went, 'You and whose army?' And I went, 'No, you are the army…' (P13, DPO and former teacher)

This, again, is consistent with the findings of the 2020–21 EdTech Survey. Schools have a finite budget, and given the choice, spending on cybersecurity was placed third out of five choices for secondary schools (behind networking and broadband) and fifth for primary schools (worryingly, also behind 'none of the above' and 'don't know') (CooperGibson Research, 2021). **Despite being incentivised, or even required, to become increasingly digital, schools may lack the skills and resources, to do so in a safe and secure way.**

## Data are disproportionately collected and underused

**Many interviewed participants recognised that appropriate data could possibly be used to inform certain generalised aspects of a child's school experience. However, participants were also aware of the limitations of this data – and the fact that,**

**without a reasonably skilled analysis of the data, it would not be used to its full potential:**

> The problem we have in schools is there's so much information, it's whether you can use that in a useful way. It's like data rich, information poor… You've got lots of numbers and statistics, but what are you doing with it? Does it drive intervention and change? And that's the key thing. But you never know what you need… (P20, head of school)

P20, a head of school, highlighted another area of missed opportunity when it came to the use of data in schools – the lack of interoperability of data between systems, in part because of the wide range of services available:

> …it's the sheer range of commercially available…platforms. For example, with safeguarding, a lot of schools use [one safeguarding tool], some schools use a [different safeguarding tool]. The two don't talk to each other… You've got to download files and all sorts of things if you're talking to a different system.

P31, an executive headteacher, commented that the need for exchange of data between schools in the local area meant that they had actively decided not to change systems:

> …because so many schools in [local area] use [specific MIS], we've got a data…sharing…opportunity for all the other data that we have…everybody is using the same structures and systems. It means that we can do that really quickly and efficiently because the majority of schools in [local area] use the same management system. So, to move away from that would potentially cause problems and hiccups.

Inefficient transfer of data between systems can make processes slow at best and insecure at worst. Data protection specialists interviewed were also concerned about the ability for both schools and those requiring data from schools to ignore, or forget about, the data protection principle of data minimisation in the name of convenience:

> There's a system where…you can get [school trip] money from parents or wherever it was and then oh, actually, it's really handy because you can also log on the passport numbers and stuff on here as well. And you can also log on all the disability information, so you can pass that on as well. (P12, local authority DPO)

There is also the worry that data, once entered into a system about a student, could well be recalled at a later date, taken out of context and used in ways it was never intended to be:

> Permanent exclusions are rare, and even then, we nearly always would manage, place in another school to go with it. And it would never be referenced in anything we subsequently did. Never. You don't put it onto a university application reference, or an employer's reference…it's over. But you know that, actually, against their URN [Unique Reference Number] in some database somewhere, that information still sits. And is that something to be worried about? Some people would say no. Others would say, well hold on. They've no business knowing. And who knows? And where's it going? (P25, headteacher and union leader)

Of vital importance is the recognition that data are only analysed based on the parameters that are set for it. Data cannot provide all the information surrounding a child's situation. Those who do not fall within the school's previously considered risk factors, for example, may fall through the cracks based solely on the data:

> So, a child looked-after, I quite agree that their data needs analysis at regular intervals, and that if there's a problem we should try and assist them to move forward. And the same would apply to [pupil premium children]. But then, there will be a gap for children who don't fall into those camps. Nobody checks on them. And they are seen as having been failed by the school, when, in fact, they're failed by the system. (P13, DPO and former teacher)

External data modelling solutions are also a cause for concern because, on the one hand, 'they tend to produce a particular model of student achievements which is quite restrictive when you set it against the whole breadth of children's learning…the models of assessments that are sold to school by companies are educationally unhelpful' (P3, union staff). On the other hand, the entire nature of statistical modelling falls down when trying to apply it to individual students in a specific way:

> I can remember talking to a guy from Fischer Family Trust…he said, essentially f you start A-Level maths…with a grade eight at GCSE, a strong grade at GCSE, the most likely grade you will get at A-Level is a B. That's your most likely grade, okay. But the distribution is very flat, and so you might readily get an A star or an A, or a C or a D. (P25, headteacher and union leader).

The value of such analysis is, on an individual level, limited, and may not be particularly useful when faced with guiding a single student with their own set of constraints or issues.

We are far from the Secretary of State's view of seamless data sharing providing better visibility for teachers and outcomes for students. Schools seem to be in a position where data sharing requires significant effort – or use of specific systems, and manipulation by teachers and staff. Data collected and analysis conducted seems to provide a broad-brush understanding of relatively limited aspects of a child's progression through school. **In a system that looks to value the child's interests, data alone should not be enough to measure a child's growth. It would arguably be more appropriate to spend time determining what data is appropriate for analysis, and work to ensure the interoperability of those data and the systems that create and ingest them.**

## Limits of schools' control over data processed from children

**Schools are not geared up to take a stand on technologies that may not meet GDPR requirements relating to location of data storage or data selling or reuse practices. The risks to the school of not using these pieces of software appear to them to outweigh the risks of using them – schools would far rather use a piece of technology that helps to evidence learning provision for an Ofsted inspection than not use that software because it stores data in the USA, for example.**

External DPOs, who take on this role because of a particular interest in maintaining digital privacy, struggle with this tension regularly:

> It's difficult. So, a good example…are these US-based providers. The status of using these US providers is being thrown into chaos following the Schrems

> decision.[39] So, what can we do? Little. What we can do is advise schools what the risks are so at least they understand what the risks are. (P16, local authority DPO)

> ...we're never going to say, you can't use Google and Microsoft, even though there's a few issues with, what was it, Google Analytics. (P12, local authority DPO)

And so, the risk-based decision by the school is arguably at a cost of the student's rights over their data. Although schools take care with data they retain in school for their purposes, they do not have the ability to opt out of technology provision that is global, and unregulated:

> Even if it's just their email address, it might be minimal information about them, but it's going... This data's going all over the world, basically. (P11, MAT DPO)

This issue comes about because the need for schools to retain a DPO comes at a significant price for schools that are already overburdened. Although many federations or MATs may be able to afford a DPO to attend to all of their schools, many of the in-school DPOs we talked to had this role on top of other teaching or administrative duties:

> I teach data protection and that was why the headteacher originally approached me about it... I think having someone on-site is really important... But yes, it's one of many roles. You could put an endless amount of time into data protection and be the most protected. But still, like you say, if there's EdTech with AI picking up information we don't even understand is, [the data] could be picked up [without us understanding]. (P21, DPO and school teacher)

The tension between being on-site and knowing the school against having more knowledge of the nuances of the law is a tricky one. As such, a key part of the external DPO offering is that additional legal knowledge, whether or not the schools listen to it:

> ...schools want to do the right thing but...people...don't explain it to them well...schools do want to do the right thing, but they've got limited time and resources. And if they don't buy a service like ours, they have limited expertise to be able to interrogate these statements from these providers or these research parties. (P16, local authority DPO)

**Once again, limited time and resources leads to the uses of data provided to for-profit EdTech providers being overlooked, because it is complex and opaque, and difficult to change – and they are, typically, practices that adults have already encountered, and acquiesced to, in their personal online experiences. This leads to the normalising of sharing personal data with EdTech providers in a way that facilitates the interests of those providers, without the opportunity to explore what children's best interests in relation to such usage models may be. The lack of uniform scrutiny makes it hard to argue that there is a fair balance between data**

[39] Referring to the Court of Justice of the European Union's July 2020 judgment (*Data Protection Commissioner v Facebook Ireland Limited and Maximillian Schrems*, 2020) commonly referred to as *Schrems II*, which confirmed that the EU–US Privacy Shield framework is an insufficient mechanism to ensure compliance with EU data protection requirements.

**provided to these systems that is subsequently used to further business interests versus the best interests of the child.**

# Recommendations for change

> Teachers need to be able to critically assess digital products. I want to see a new culture of evidence-based use of technology embedded in every school. In this way it will be easy for schools and families to use the right products at the right time for their learners... But let me be clear. I am not going to wade in and start telling schools which bits of kit to use or when. Nor will you see my department suddenly start buying EdTech companies or interfering in the marketplace. My role is to make sure schools get the guidance and information they need to make informed decisions for the benefit of all their pupils and staff. (Rt. Hon. Nadhim Zahawi MP, Education Secretary, March 2022, quoted in DfE, 2022b)

We set out to understand how to enable schools to harness the benefits of technology while mitigating the risks by interviewing participants with experience in the state school sector in England. We found that schools are working incredibly hard to try and integrate technology that may well not work as hoped, and to manage their data protection obligations. There is confusion – from the Secretary of State down, it would appear – between the inherent value of good quality data, well understood, to push pupils and schools forward and the desire to bring technologies into school, often with opaque data practices that serve no such valuable purpose.

The result, endorsed in DfE guidance, is that schools generally align data protection with safeguarding, and otherwise largely ignore other data practices of EdTech providers that are rarely in children's best interests. This is reasonable and prudent, as safeguarding is well understood as important by teachers. Student-facing EdTech products, in particular online products, do not ostensibly pose safeguarding threats in the same way that access to a school's MIS might. Their data collection is often opaque, and in many cases wrapped in complex terms and conditions that users can rarely challenge. Tight budgets and thin resources mean that schools cannot afford to expend significant efforts to ensure that where personal data are provided to such products, it is done so in the best possible way.

Participants had a number of recommendations, which are detailed below. It is interesting to note that many of these echo, in whole or in part, points raised in earlier DFC reports (Livingstone et al., 2021, Day, 2021).

## Governmental and regulatory bodies

- **Increased investment by the ICO in educational expertise.** Participants recognised that the ICO is transparent about its relative lack of knowledge of the sector. This must improve, by hiring experts in educational data protection to ensure that the sector is appropriately and accurately supported and regulated.
- **The DfE should play an active part in the oversight of EdTech providers.** The current political stance, framed as empowerment for schools, denies the truth of the matter that schools have both an imperative to educate, and be shown to be educating, yet also incredibly slim budgets for doing so, and precious little time to spend performing complex analysis of technological solutions. Choice over technology is

rarely down to being 'the best' solution but is widely driven by peer pressure and budget constraints. Schools want DfE to oversee the market so that a school's lack of resources does not end up with technology solutions that unfairly prioritise commercial benefit over children's best interests.

- **Mandate robust certification schemes to ensure accountability.** Certification schemes for digital products and services that are emerging should be introduced, to allow for quick and reliable decision-making at the time of purchase by schools. In particular, the ICO and DfE should make certificates of compliance with AADC and UK GDPR (when it becomes available) compulsory to market entry, especially when the products or services are to be used in schools, to ensure compliance with AADC and UK data protection regulations.
- **Provide more funding for digital and data protection resources to schools.** The DfE at present seems to expect schools to take their own initiative in managing technology resources, significantly increasing the likelihood of exacerbating the digital divide when resources are stretched. At a minimum, funding should include plans for funding for infrastructure and essential hires (DPOs, whether external or internal, and IT managers with cybersecurity certifications) and funding for a maintained and secure network.
- **Provide guidance on good EdTech integration for schools.** Schools are desperate to understand from a central, trusted source the most appropriate way to incorporate different types of technologies into different subjects and different ages. Centralised and up-to-date 'what works' documents could help avoid wasted time and effort across schools in the country.
- **Encourage the creation of data standards for educational data sharing.** The introduction of data standards for core aspects of official reporting data[40] would lead to improved interoperability and reduced manual interventions. It would also serve as a check and balance to the expansion of collected and shared data types. It would also reduce the time taken by and errors that could occur from the manual transferring of data between systems, something that remains commonplace in schools today.
- **Provide training for teachers and school staff about the beneficial uses of EdTech and data protection**.

## EdTech companies

- **Stop using student data exploitatively.** This could apply in many different ways. Do not create technologies that collect biometric data because it is a bit quicker or because it sounds more effective; do not make the reuse of student data a revenue stream directly (through selling to third parties) or indirectly (through facilitating access to datasets as part of a wider arrangement with research or other institutions) without gaining explicit consent to do so from users; and so on. Schools do not want to be implementing products at the cutting edge of technology without a public debate and consensus over the appropriate uses of children's education data by commerce, including on the role of EdTech in transforming education.

[40] As seen with, for instance, Open Banking Standards, standardising elements of consumer banking data sharing (https://standards.openbanking.org.uk).

- **Comply with data protection obligations.** If you want to operate in the UK or Europe, for instance, adhere to the data protection requirements. If you do not know what they are, or cannot afford to do so, you should not be operating in that market.
- **Ensure clear and evidence-based product positioning.** There are already too many systems in the market that are not interoperable and do not do what schools need them to. What problem will your product actually solve? Schools are asking for less choice, not more.
- **Ensure co-creation of a product.** Build technologies that are developed with a broad range of the type of schools and individuals that are the intended users and learn from them to make more inclusive products.
- **Evidence how your product improves educational outcomes.** Publish the research done that shows that your product improves what you say it does. Show why the research is credible. Repeat the research often. Let the research drive the ranking of features in your product backlog.
- **Ensure fair and understandable terms of use.** Comply with AADC[41] and the IEEE 2089-2021 Standard for Age Appropriate Digital Services Framework to ensure clarity in explanation of the use of personal data. This would empower schools in contract negotiation around the use of data and will improve the availability of data for the completion of DPIAs (Hooper et al., 2022).
- **Process only data proportionate to the product's purpose and educational outcomes.** Consider explaining in detail where data – even anonymised data – generated by users is shared, and where money is received for that sharing directly or indirectly (e.g., as part of a long-term contract with a research organisation). Where data are shared with aggregators, explain who they subsequently share or sell that data to. If you cannot explain this, explain why you think it is appropriate to do it. Similarly, explain what happens to the data that users provide.

## Schools

- **Provide education for students** on their rights as data subjects and their critical understanding of how and why their data is shared.
- **Involve parents**, recognising that they may need targeted support to help their child attain the levels of interaction with technology that the school strives for.
- **Train staff.** This could involve regular INSET days on core technologies, sharing best practices and promoting good data protection practices.
- **Ensure that the DPO receives adequate time for training** and continuing professional development (CPD) in this ever-expanding area. Encourage interaction with other school DPOs and external DPO groups.

## Priorities for change

We are a long way from the vision that the Secretary of State has of the EdTech ecosystem. To stand a chance of getting there, the needs of schools – not just the needs of the government and EdTech companies – must be heard and met. In particular:

1. **Schools expect and want support in choosing EdTech solutions that are effective, rights respecting and safe.**

[41] In particular, Standards 4 and 8.

2. **Schools expect EdTech providers to act in children's best interests in their use of data – and these should be held to account by the DfE and the ICO if they are not.**
3. **Schools need more support to ensure they have the infrastructure, resources and staff experience in school to manage children's education data properly.**
4. **Students need equitable technology access at home to facilitate their education as society moves increasingly towards a reliance on online learning.**

Only then might schools start to be in a position to be the empowered consumers of EdTech products that are described in the vision above.

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# Appendix: Interview topic guide

*Note that these questions were adjusted to suit the specific role that an interviewee played in relation to a school(s).*

- How has the pandemic affected your institution's use of EdTech?
  - Did you regularly use these products prior to the pandemic? If not, how did existing procurement, data protection, business continuity processes and procedures withstand any rapid onboarding of such products? Have these processes evolved as a result?
  - Which products do you use, for example, for video conferencing, daily student work, marking and assessment and contacting parents? (If you use others, what do you use them for?)
  - Do you have a standard process for researching, road-testing and reviewing potential new software? Do you review the usefulness of the software when licence renewal occurs (and what do you consider as useful at that point)?
  - What resources do you draw on or who do you turn to, to set up your EdTech?
  - Have you come across the Age Appropriate Design Code?
- What can you tell us about the kinds of data that are collected from students at school? Volume, types, special category data…?
  - Do all students have the same data collected about them?
  - What is in each child's education record? Are there multiple kinds of records per child? What are in the other records?
  - How do you manage the different data types collected? How do you deal with who has access to this information?
  - Which EdTech service collects what type of data?
- How much control does your school have over the terms of service for the technologies you use? What can you tell us about how these data are used by EdTech providers, and for what purposes? Are they shared with third parties, and why?
  - Do you get any choice in the data that are collected? If so, how do you decide on and exercise that choice?
  - Are you ever provided with a list of third parties or other details?
  - If so, how do you evaluate these? Can you ever say no or choose which third parties have access to the information?
- How comfortable are you/your institution in the procurement and use of the EdTech solutions you use? How much responsibility do you take on, and is there any wiggle room in the contracting process? Do you get support with this?
  - What kinds of contractual arrangements does the school have with EdTech companies, and do you have scope to vary them? Is the school always the data controller, or is the school sometimes joint controller with an EdTech company? How does that work out? What happens in practice when there's a complaint or problem?

- How does the institution generally weigh the benefits or risks of data-driven EdTech? Are there difficult trade-offs? Talk us through a recent decision.
    - How well engaged is your board (or equivalent) on the role of EdTech and data protection? Do they have specific knowledge, training or professional experience (that you are aware of)?
- What are your thoughts on the growing use of AI in schools? CCTV? Facial recognition? What benefits or risks do you see in emerging technologies?
    - How do you educate yourselves about this?
    - How would you educate your students about this?
    - Are there educational purposes to such tools as you see it, or are they more administrative, safety-based?
- What insights do teachers draw from learning analytics and other data collected through various EdTech services used in the school? Which insights do teachers find valuable? Is the collected data fully analysed for its value – to the child, to the school, to future pupils?
    - What insights would the school like to draw from the various types of data processed from the children, and to what end?
    - What insights would a teacher like to draw from the various types of data processed from the children, and to what end?
    - How are the insights from learning analytics used in the classroom (e.g., personalised learning, for SEND)? What could be improved?
    - Is there data that is under-utilised or not quite providing the analysis you need?
- Where do you and your institution get guidance and support on EdTech and data processing? Is the system working, or is more/different guidance needed, and if so, where should it come from?
- What kinds of data protection issues do you deal with day to day? What issues arise, and what steps do you take to resolve them? Talk though a tricky instance.
    - Who do you consider to be your major stakeholders in relation to data protection?
    - Are you aware of any data protection issues (either for yourselves or for others) having arisen with any of the producers of EdTech that you use, or with peer institutions more generally? Have you learned anything from these situations?
- How does the school explain data protection issues to students and parents, and are they involved in EdTech decisions? What do they ask of you? Concerns?
    - Is there a process or policy that covers complaints, concerns or any other aspect of technology use within the institution?
    - Is there a process of providing education to students and parents about data protection (above and beyond coverage of the subject in the national curriculum)?
- What training do you receive to fulfil the role of DPO? Who supports or advises you in this role? Do you need more?
    - How often do you receive training or updates? From whom, and in what format?

- How do you work through a data protection issue that doesn't neatly fall within situations covered in your training or experience? How do you research and resolve such issues?

- What would you change about the EdTech you use? What would you change about the use of student data?

  How has the introduction or ongoing use of EdTech affected the teaching and learning in the classroom? Has it altered teaching or learning styles or students' engagement? Would you consider these effects and/or changes beneficial, and to whom?