Data on teachers' lives during the pandemic

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Open Data Institute

Contents

About

This report has been researched and produced by the Open Data Institute (ODI), and published in March 2021.

Executive summary

This report was written in March 2021, at a time when UK schools were beginning to reopen fully for the second time during the coronavirus (Covid-19) pandemic. There were already indications of significant losses to children's learning and well-being, but little information on where the losses would be concentrated, and where additional resources were most needed. There was also very little data about the experiences of teachers during the pandemic; an under-researched area during compulsory school closures, but one that is particularly important to understand. About 10% of the teaching workforce leaves the profession each year and this 'teacher wastage' is likely to be particularly problematic at a time when we need a stable, motivated workforce as children recover from the effects of the pandemic.

For this report, one of the major UK teachers' unions, the NASUWT, made data from a large longitudinal survey of its members available to the ODI. In the NASUWT's 2021 'Big Question' survey, additional questions relating to teaching during the pandemic were added. Some 2021 responses were compared with the 2019 and 2020 surveys to identify trends. Data from this survey was combined with other open and publicly available data by Mime, an educational data consultancy, before being anonymised, aggregated and made available for exploration through an interactive tool.

In this report we outline the key findings from this combined dataset, looking specifically at the experiences of teachers during the pandemic. We find that about half of teachers were required to take on a dual teaching role: providing classroom supervision to those children still attending school, and providing remote learning to others. Many teachers were unprepared for online learning, particularly older teachers and special education teachers. Most teachers reported that their workload had increased significantly in the previous 12 months and we explore the reasons for that here. Despite the reported increase in workload and levels of stress, fewer teachers were considering leaving the profession when compared with surveys from previous years.

When asked for their estimates of learning loss in their classes, 59% of teachers who responded felt that at least half of their class had lost ground educationally in the previous 12 months. Losses were estimated to be particularly substantial in primary schools and in schools in the most economically deprived areas. When asked about factors determining children's engagement with online learning, teachers identified parental support as the most important.

Although there is a large volume of open and publicly available data on the performance of schools and children, there is very little open data that captures the professional views and experiences of teachers. We believe this survey offers valuable insight into the effects of the pandemic on teaching and learning, and the conditions necessary for recovery. As such, open data like this can usefully inform strategies at this early stage in pandemic recovery. We hope that the open publication of this dataset will encourage other organisations to open and share the data they hold as well, to support the pandemic response and aid education research and policy making.

Background

The ODI's report 'Data about children's lives in the pandemic', published in November 2020,[1] explored the experiences of parents, teachers and children during homeschooling, using a variety of data sources, and asked how better data infrastructure could provide real-time decision-making support to those involved in the education and well-being of children. It highlighted the additional pastoral roles taken on by teachers during the pandemic, socially patterned educational attainment gaps, and rises in rates of referral to Barnardo's children's support services, which were mostly driven by mental health and emotional concerns. Raised levels of stress and anxiety in teachers were also noted.

The report underlined the need for repeated data collection in order to highlight the 'changing needs of different groups of children, families and teachers within the current period of uncertainty'. The data used in this follow-up report is taken from a survey of the members of a large teachers' union, the NASUWT. The survey was carried out in March 2021, at a time when the second wave of the Covid-19 pandemic was receding and plans were being made to reopen schools to all pupils. This was an opportune time to examine teachers' experiences of work during the pandemic, their assessment of children's learning losses and their priorities for full school reopening. This will inform action by policymakers and teacher and child support organisations, both during the resumption of school life and during any future disruption to it.

In this report we outline the results of the NASUWT survey of members in England. Following an assessment of data quality, including recognition of its limitations, we present summaries of teachers' professional lives during the pandemic, including changes in workload and priorities for school reopening. We combine teachers' opinions with contextual data from a variety of open datasets to assess which schools and sectors are likely to have experienced the worst learning losses. The results of the survey support other published work, reviewed later in this report, indicating that the impact of partial school closures on children's learning and their well-being varies between communities. Schools, particularly in the state sector, play an important role in levelling up opportunities across communities and there is a very real risk that the loss of this levelling-up function for a year will worsen existing inequalities in our country.

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[1] ODI (2020), 'Data about children's lives in the pandemic'

Methods

Aims and questions

In this report we explore how data can shed light on the impact of the pandemic on school education, both on the teaching workforce and on teachers' perceptions of the learning and well-being of children. We use survey responses and open data specifically to look at:

i) The impact of the pandemic on teachers' working lives

- The teaching roles they took on
- Their preparedness for remote teaching
- The change in workload
- The likely influence of these experiences on workforce retention
- Their priorities and concerns about the reopening of schools

ii) Teachers' estimates of learning losses in their pupils

- The groups of children likely to have experienced the greatest learning losses from partial school closures
- Teachers' understanding of the reasons behind lack of engagement with online teaching

iii) How open data can be used to support policy making

- The current gaps in data infrastructure that limit evidence-informed policy making in this area

The data

Data sources

This report combines data from several sources. We start each of the two 'Findings' sections (impact on teachers' working lives and teachers' estimates of learning loss) with a short review of relevant, current, published literature. The primary data source used in this report was the annual 'Big Question' survey by the teachers' union NASUWT. The 'Big Question' survey is a longitudinal survey that has been sent to NASUWT members each year since 2011. For the 2021 survey, we added additional questions related to teaching during the pandemic. We were also able to compare some responses with data from the 2019 and 2020 surveys to identify trends.

The survey was sent to NASUWT members in all four UK nations, the Channel Islands and Gibraltar, although this interim report only examines the data from England. This is because education is managed differently across the four nations, and the contextual data we matched to was often only available for England. Unions are understandably cautious about sharing information submitted by their members, but, in the context of the pandemic, the NASUWT leadership decided that, as long as suitable safeguards to privacy and security were in place, data created by its members could usefully inform solutions and policy making in the education sector. The ODI hopes that this initiative will encourage other organisations that traditionally keep their data closed to share it in a secure way when it could inform public decision making.

The survey data allowed us to examine responses by the type of school that teachers worked in, and by teacher age and gender. Other non-personal, public data was taken from the sources listed in Table 1 and geographically matched with the postcode stem of schools.

Data category	Dataset	Geographical level	Source	Link	Date data published	Licence
Connectivity	Residential households unable to access 30Mbps	OA*	Ofcom	www.ofcom.org.uk/research-and-data/multi-sector-research/infrastructure-research/connected-nations-2020/data-downloads	2020	Ofcom terms of use (open)
Economy	Income deprivation affecting children	LSOA*	Ministry of Housing, Communities and Local Government	https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019	September 2019	OGL (open)**
	Universal credit and jobseeker's allowance claimants	LSOA*	Office for National Statistics	https://www.nomisweb.co.uk/datasets/ucjsa	January 2021	OGL (open)
	Working 49 hours or more per week	OA*	Census 2011	https://www.nomisweb.co.uk/census/2011/ks604ew	2011	OGL (open)
Health	Covid-19 infection rate	MSOA*	UK Government	https://coronavirus.data.gov.uk/details/download	Daily update	OGL (open)
Demographics	Overcrowded households	OA*	Census 2011	www.nomisweb.co.uk/census/2011/qs412ew	2011	OGL (open)
	Lone parent households	OA*	Census 2011	https://www.nomisweb.co.uk/census/2011/ks107uk	2011	OGL (open)
	Teacher workforce	National (England)	Department for Education	https://www.gov.uk/government/statistics/school-workforce-in-england-november-2019	November 2019	OGL (open)

Table 1: Additional sources of open data used in this report

*OA, LSOA and MSOA refer to output area, lower super output area and medium super output area, respectively. These are progressively larger geographical units of census data. For further information, see:
https://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography

**OGL refers to an Open Government Licence

Data limitations

In any research study there are limitations to the data, and it is important to be aware of these in order to interpret the results accurately.

1. The response rate was low. Of the 250,534 teachers in England who are members of NASUWT and were invited to take part in the survey, just 4,490 completed the survey in the two-week window allowed for data collection for this report.

    In order to determine how representative the data is of the overall teaching workforce, we compared the profile of survey respondents with the profile of the teaching workforce in English state schools and the membership of the NASUWT (Table 2), using data from the most recent school workforce in England dataset (from November 2019). The survey results were then weighted for these characteristics so that the data was more representative of the overall teaching workforce (see Technical Appendix).
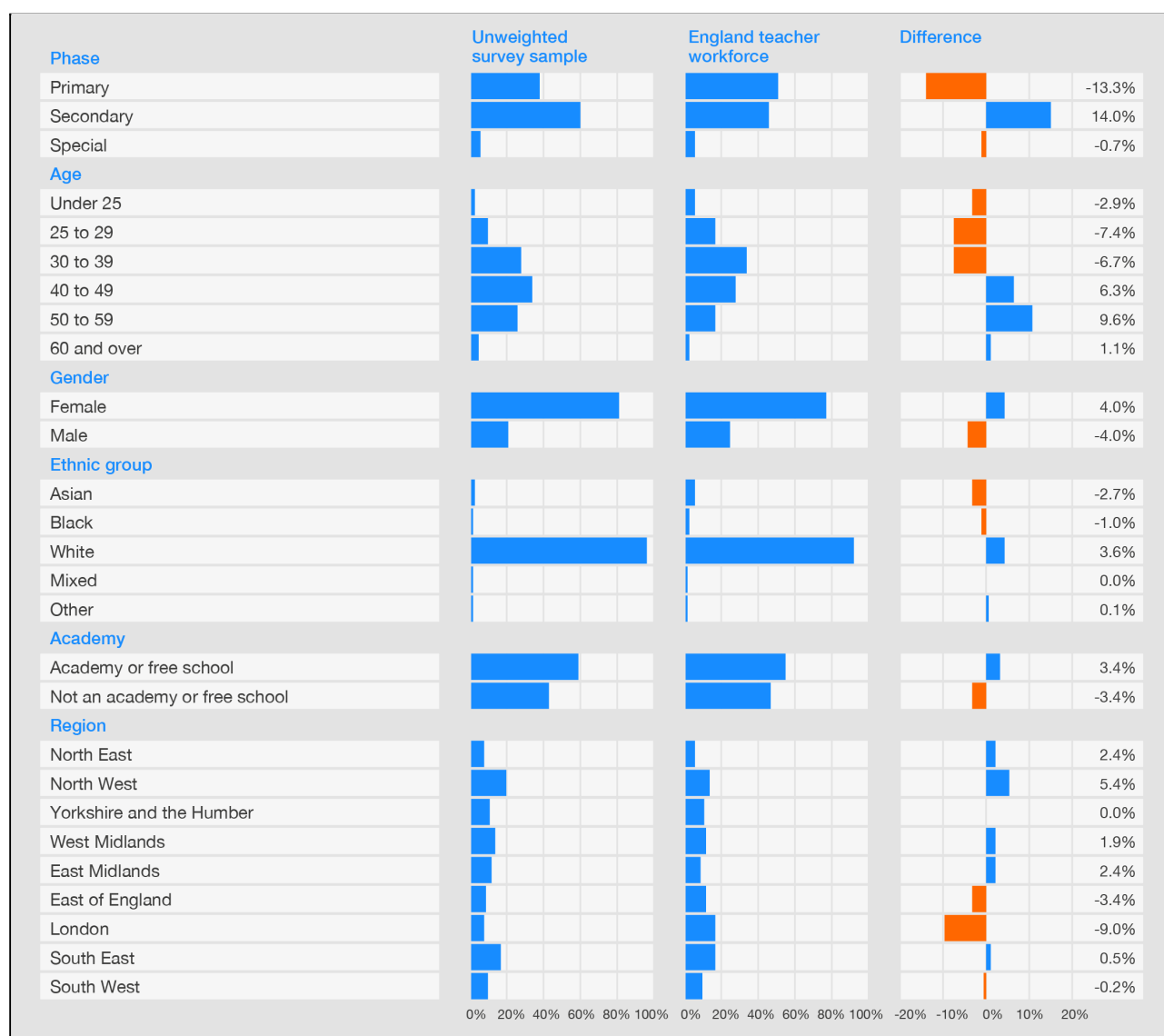
Phase	Unweighted survey sample	England teacher workforce	Difference
Primary			-13.3%
Secondary			14.0%
Special			-0.7%
Age			
Under 25			-2.9%
25 to 29			-7.4%
30 to 39			-6.7%
40 to 49			6.3%
50 to 59			9.6%
60 and over			1.1%
Gender			
Female			4.0%
Male			-4.0%
Ethnic group			
Asian			-2.7%
Black			-1.0%
White			3.6%
Mixed			0.0%
Other			0.1%
Academy			
Academy or free school			3.4%
Not an academy or free school			-3.4%
Region			
North East			2.4%
North West			5.4%
Yorkshire and the Humber			0.0%
West Midlands			1.9%
East Midlands			2.4%
East of England			-3.4%
London			-9.0%
South East			0.5%
South West			-0.2%

Table 2: Demographic profile of survey participants compared with the teaching workforce in English state schools.

2. Teachers are in a strong position to give an opinion about learning losses and the factors leading to poor engagement in their pupils. However, it is important to recognise that all opinions are subjective and may come with assumptions. Despite this, we argue that teachers' professional opinions about their classes' learning contribute important and useful data, given that the alternative is extensive, in-depth testing of children. While testing children directly may improve the data, concern has been raised about the effect of early reintroduction of statutory testing on children's well-being, after a year when many will have lost ground educationally and socially.[2]

3. We anonymised teachers' responses and aggregated them at the level of school postcode stem. We then combined these responses with other data from their school's postcode in order to understand learning losses in the context of social and economic factors. However, the school postcode is only an approximation of the residential postcodes of the children who attend that school, as the catchment area may extend across several postcodes. It is difficult to mitigate against this and

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[2]Institute of Education (2020), 'Responding to COVID-19, Briefing Note 3: Resetting educational priorities in challenging times'

the approximation needs to be borne in mind when interpreting the results. In addition, postcode stems do not exactly match the census areas they are mapped to.

4. Our analysis of children's learning losses is at school postcode level, not at the level of individual children. This means that conclusions cannot be drawn about the losses and needs of individual children. Similarly, our analysis of teacher experience is drawn from analysis of a sample, when even within schools, teachers' experiences may vary dramatically. Aggregate data can be used to understand trends and patterns, but cannot be used to make predictions at an individual level.

Data sharing

Mime data consultancy has created an interactive tool to allow others to explore the findings. This tool can be used for subgroup analysis, but it should be noted that groupings containing less than 20 individual responses have been removed in order to preserve confidentiality. The tool is available at: https://theodi.org/article/data-on-teachers-lives-during-the-pandemic-report

Findings

Impact on teachers' working lives

Background

Over the past year, there has been a lot of attention paid to the impact of school closures due to the pandemic on children, and whether school closure is an effective public health tactic to prevent the spread of disease.[3] Less attention has been paid to the impact on the teaching workforce. This is an important gap, given the role of teachers in mitigating the impact of school closures on children's well-being and learning.[4]

Existing data

Retaining teachers is a problem in the UK. Around 10% of the workforce leaves the state sector every year and the pupil:teacher ratio has been increasing since 2011.[5] The nature of the workload has been implicated. Performance management, loss of autonomy and limited opportunities for both professional development and participation in decision-making have all been identified as causes of 'teacher wastage'.[6] The NHS is another area of the public sector that has experienced a growth in performance management in recent decades, and data on retention of NHS staff has noted similar concerns, and highlighted that salary increases only partially mitigate the impact on workforce retention.[7]

Data that monitors trends in teachers' motivation and engagement with their work could play a role in assessing the impact of policy decisions on workforce retention. Publishing the data from a large annual survey allows access to this data, with the consent of participants, without the intrusion associated with commercial workforce analytics that analyse employees' digital activities.[8]

[3] BMJ (2020), 'Effect of school closures on mortality from coronavirus disease 2019: old and new predictions'

[4] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'

[5] House of Commons Library (2019), 'Research Briefing: Teacher recruitment and retention in England'

[6] British Journal of Educational Studies (2020), 'What motivates people to teach, and why do they leave? Accountability, performativity and teacher retention'

[7] BMJ Open (2020), 'Relationship between labour force satisfaction, wages and retention within the UK National Health Service: a systematic review of the literature'

[8] Social Sciences (2019), 'Big data and human resources management: The rise of talent analytics'

Challenges of adapting to online teaching

Although the term 'school closure' is widely used, it is important to recognise that schools have remained physically open to the children of key workers and vulnerable children, and have continued providing education to all students. This means that many teachers have had to provide remote teaching for a large proportion of their pupils, while continuing to provide classroom teaching and supervision for others. The almost overnight switch to online teaching for the majority of pupils in March 2020 meant that teachers' preparation for it was minimal. There was no national policy on the provision of online teaching, and schools were given freedom about how to implement remote learning, which meant that skills and materials had to be developed rapidly.[9] Live online teaching was constrained by concerns about child safety and unequal digital access, and so many lessons had to be recorded as podcasts, which can be a time-consuming process for teachers, requiring planning, scripting and editing. Although online teaching was challenging and teachers missed social interactions with pupils,[10] there was evidence of them finding ways to deliver remote learning even for highly social subjects such as music,[11] and for many teachers, there was a sense that they had learned new skills from the challenges posed by the pandemic.[12] Some teachers were surprised to find that some of their pupils thrived on home schooling and they found some unexpected star learners.[13]

Unfortunately, despite these efforts and some success stories, engagement with online learning for most pupils has been problematic. A survey of teachers in May 2020 indicated that only 42% of pupils had submitted their most recent piece of set work and 90% of teachers thought their pupils were doing less work than normal.[14]

Pastoral care

Several reports indicate that teachers' primary concern during school closures has been with the welfare of their pupils, particularly vulnerable pupils, rather than educational issues.[15] Some dealt with this by delivering food parcels and learning materials directly to children's homes.[16] However, as the pandemic progressed, teachers also became increasingly concerned about the well-being of children

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[9] Technology, Pedagogy and Education (2020), 'The educational response to Covid-19 across two countries: a critical examination of initial digital pedagogy adoption'

[10] PsyArXiv (2020), '"We need clear directions, if we're going to move forward. It's as simple as that": Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

[11] British Journal of Music Education (2020), 'Editorial Research: Music education in a time of pandemic'

[12] PsyArXiv (2020), ''We need clear directions, if we're going to move forward. It's as simple as that': Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

[13] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'

[14] National Foundation for Educational Research (2020), 'Pupil engagement in remote learning'

[15] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'; Human Rights Watch (2020), 'Children in England going hungry with schools shut. Uneven UK approach for Covid-19 doesn't guarantee children's right to food'; International Literacy Centre (2020), 'Responding to COVID-19, Briefing Note 3: Resetting educational priorities in challenging times'

[16] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'; PsyArXiv (2020), '"We need clear directions, if we're going to move forward. It's as simple as that": Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

who had not previously been identified as vulnerable and those who were clearly losing ground academically.[17]

Professional relationships and identity

Teachers' relationships with pupils, parents and colleagues are fundamental to their sense of well-being, and good relationships can protect against burnout.[18] Social distancing rules during school closures have meant less face-to-face contact with colleagues as well as with children. To some extent, this could be compensated for by virtual support, often using social media.[19] However, some teachers found social media problematic as the messages could be quite demoralising and made it difficult for teachers to separate home and work life.[20]

A strong sense of professional responsibility was apparent as teachers and school leaders took on additional roles in the pandemic, such as cleaning duties when schools returned [21] and food deliveries when the government's voucher scheme failed.[22]

Changing attitudes over time

Early in the pandemic, some teachers reported feeling a sense of satisfaction that they were able to rise to the challenge and were permitted to use their professional judgement to teach and care as well as possible in difficult circumstances.[23] Most of the low points described by a stratum of teachers after the first six weeks of lockdown related to uncertainty, particularly a feeling of rush and lack of clarity when schools were first closed.[24] This feeling may have intensified later in the year, when some teachers reported receiving confusing and contradictory messages about school reopening that prevented them from being able to plan ahead.[25] A need for clear guidance and better communication was strongly expressed by one group of teachers.[26]

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[17] PsyArXiv (2020), '"We need clear directions, if we're going to move forward. It's as simple as that": Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

[18] Educational Review (2021), 'Teacher job satisfaction: the importance of school working conditions and teacher characteristics'; Teaching and Teacher Education (2013), 'Job satisfaction and teacher-student relationships across the teaching career: Four case studies'

[19] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'; PsyArXiv (2020), '"We need clear directions, if we're going to move forward. It's as simple as that": Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

[20] ibid.

[21] PsyArXiv (2020), '"We need clear directions, if we're going to move forward. It's as simple as that": Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

[22] Human Rights Watch (2020), 'Children in England going hungry with schools shut. Uneven UK approach for Covid-19 doesn't guarantee children's right to food'

[23] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'

[24] ibid.

[25] PsyArXiv (2020), '"We need clear directions, if we're going to move forward. It's as simple as that": Teachers' narratives during partial school reopenings in the COVID-19 pandemic'

[26] ibid.

While there is evidence that teachers were willing and able, with very little notice, to teach in an entirely different way and to fill the chasm in pastoral care created by school closures, these efforts have taken their toll: 62% of 7,000 teachers responding to a survey in February 2021 reported feeling 'drained and mentally exhausted'.[27] There was also concern expressed among teachers that, at the end of the pandemic, there will be a rapid return to school inspections and pupil testing, pushing pupils too hard when their learning may have deteriorated, together with doubt about whether teachers' views would be listened to.[28] The publication of a large teachers' survey gives them a voice with which to record their experiences of teaching during school closures and to express their views about needs and priorities for post-pandemic recovery. We report some of the key findings below.

Teachers' experiences: survey findings

Teaching roles

Over half (52%) of the NASUWT 'Big Question' survey respondents said they had a dual role during school closures, providing remote teaching for some students and continuing to provide classroom teaching and supervision for others; 42% provided remote teaching only; and the rest either provided classroom teaching only (5%) or had been unable to teach during the pandemic (1%). The teachers' working patterns varied with the age of the children taught: 89% of sixth form college teachers were predominantly teaching online, but 71% of primary school teachers were providing both face-to-face and online teaching. The high proportion of primary school teachers providing both types of teaching probably reflects the need to provide classroom teaching and supervision to the younger children of key workers.

Preparation and support for online teaching

Of the teachers who had been delivering online learning, only 9% felt well prepared for remote teaching. There was a clear age gradient, with 11% of teachers under 25 feeling well prepared, compared to only 7% of teachers aged 50 to 59. When asked if they felt well supported, 19% of teachers aged under 25 and 13% of those aged 50 to 59 reported feeling well supported. Teachers over the age of 60 were surprisingly positive about online teaching, with 12% feeling well prepared and 20% well supported. Special education teachers were less likely to feel well prepared (3%) and well supported (10%). Overall, only 17% of teachers were given training in dealing with pupils' online behaviour.

Teachers' workload during the pandemic

The average weekly hours worked by full-time teachers was 52 hours and 61% felt that their workload had increased significantly during the pandemic. 81% also reported an increase in stress over the previous 12 months.

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[27] Times Educational Supplement (2020), 'Exclusive: Exhausted teachers "pushed to the brink"'
[28] International Literacy Centre (2020), 'Responding to COVID-19, Briefing Note 3: Resetting educational priorities in challenging times'

When asked what was contributing to the additional workload, 93% identified remote teaching; 69% lesson planning; 64% administration; and 57% pastoral care. Overall, 58% of teachers had spent more time dealing with parents; this was particularly the case for primary school teachers (69%), special education teachers (78%) and senior management (72%). Female teachers were more likely than male teachers to identify pastoral care (60% vs 48%) and dealing with parents (60% vs 54%) as taking more time than previously.
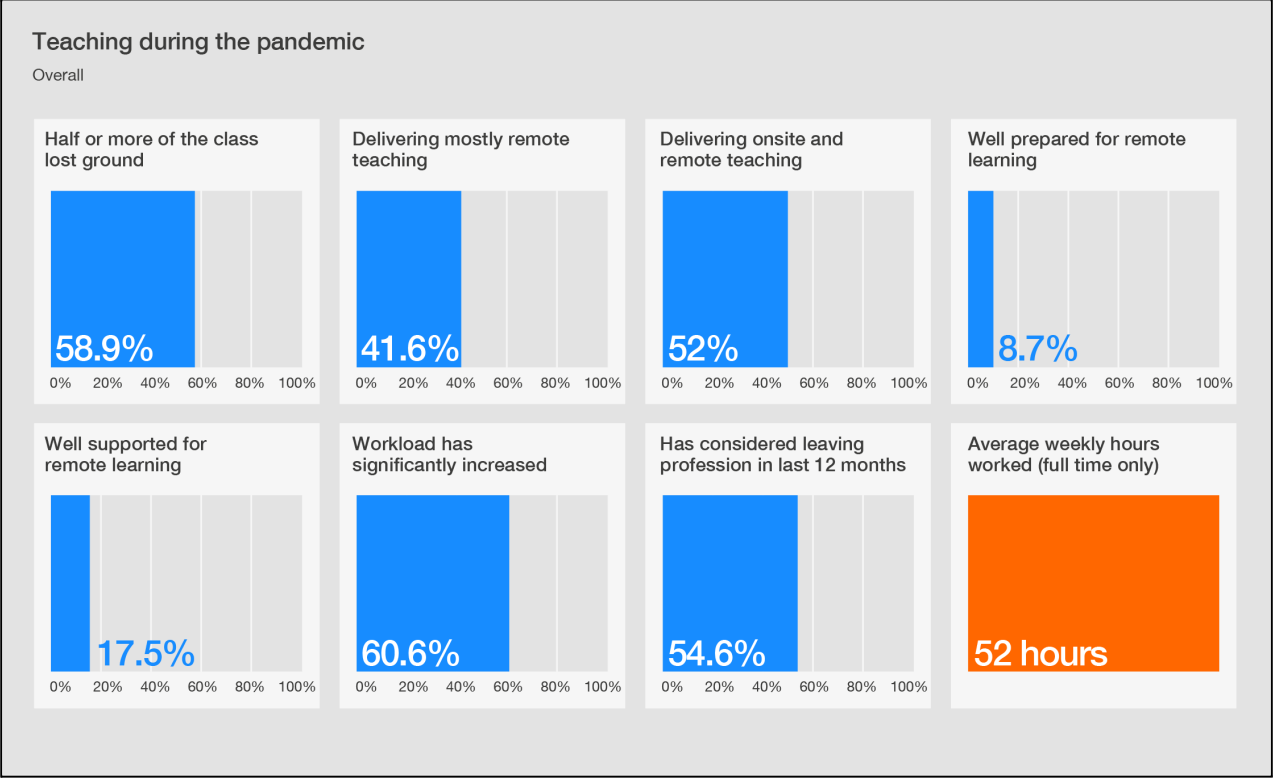

Table 3: Teaching during the pandemic.

View teachers' working patterns during the pandemic, broken down by teacher role, using the interactive tool.

Teachers' challenges and priorities for the return to full school opening

Teachers were asked to rank their greatest challenges during school closures. Dealing with the additional workload caused by online teaching was the highest ranking challenge overall, followed by difficulties in getting pupils to engage with remote learning, and then the monitoring of children's welfare.

When asked about their greatest concerns for schools reopening (Table 4), the risk of Covid-19 spreading within schools was ranked highest overall, followed by pupils' mental health and then the need for academic catch-up. When the rankings were compared across different school sectors, primary school and special education teachers ranked mental health concerns at least as highly as concerns about the spread of Covid-19.
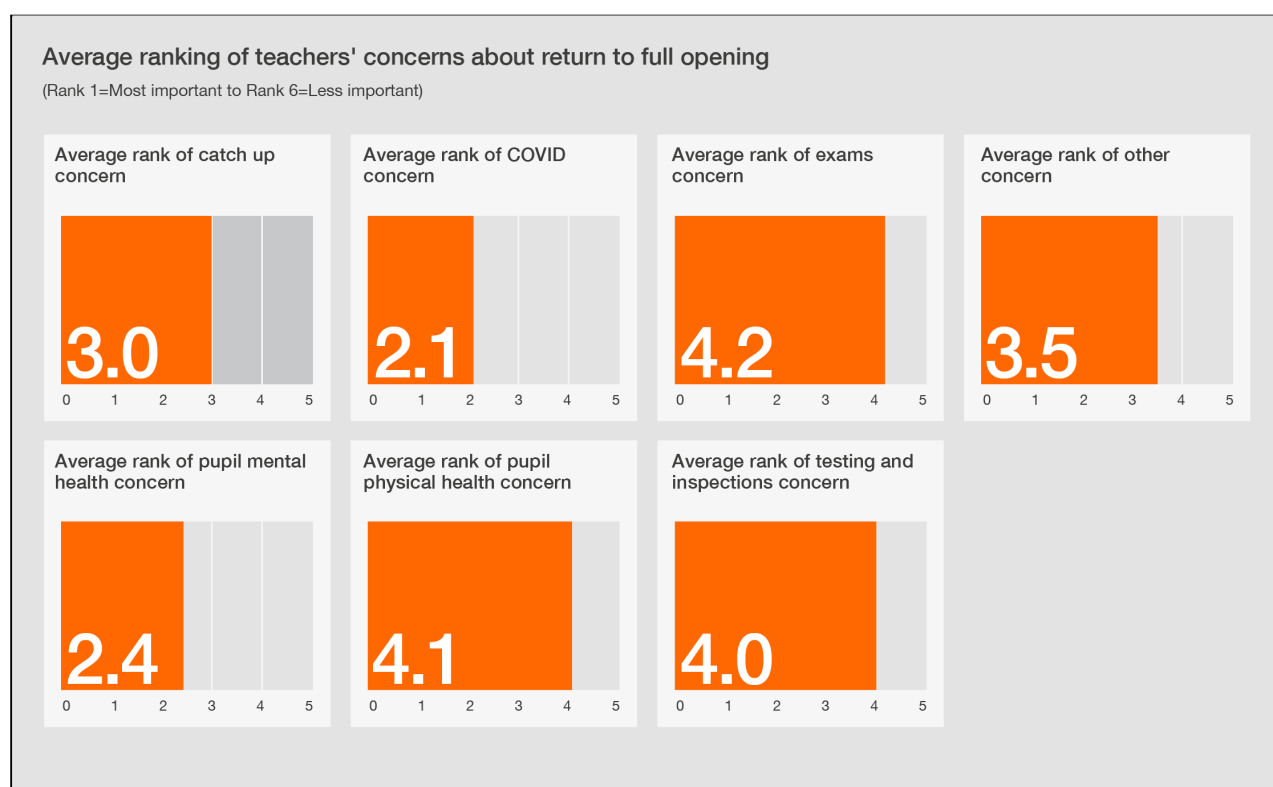
Average ranking of teachers' concerns about return to full opening

(Rank 1=Most important to Rank 6=Less important)

Average rank of catch up concern	Average rank of COVID concern	Average rank of exams concern	Average rank of other concern
3.0	2.1	4.2	3.5

Average rank of pupil mental health concern	Average rank of pupil physical health concern	Average rank of testing and inspections concern
2.4	4.1	4.0

Table 4: Average ranking of teachers' concerns about return to full school opening. View average rankings of concerns, broken down by teacher role, using the interactive tool. Lower numbers indicate higher ranking.

Teachers were also asked what they thought should be in place before reopening schools. The responses that had the highest percentages of teachers agreeing were guidance on pupil numbers (89%), followed by availability of lateral flow testing (89%) and vaccination for teachers (86%).

Changes in working conditions over time

Several questions in the NASUWT survey have been asked for the past three years, which allow us to monitor trends. Figures 1 and 2 show how teachers' perceptions of their working conditions have changed over time. Figure 1 shows that, although stress has increased, in the past 12 months there has been a decline in the proportion of teachers considering leaving the profession or their job, and the proportion who felt their job satisfaction had declined. This may be reflective of an uncertain jobs market as a result of the pandemic, or it may reflect greater job satisfaction during the pandemic. To investigate this further, we examined 11 indicators of job satisfaction for which there was also data over three years. These indicators are shown in Figures 2 and 3. Figure 2 shows positive sentiments about working and Figure 3 shows negative sentiments. It is striking that negative sentiments trended down and the positive sentiments trended up. In other words, despite the increase in work and stress, teachers were, on average, enjoying their work more. This data suggests that increased professional autonomy and a reduction in performance management during the pandemic may have made teachers more likely to stay in the profession.

Despite the reassuring trends, it should be noted that the percentage of teachers considering leaving the profession remains high, at 55%. Likewise, the percentage of teachers who believe that teaching salary and conditions are competitive has increased, but from only 7% to 15%.

Figure 1: Trends in teachers' workload, stress and intention to leave the profession since 2019
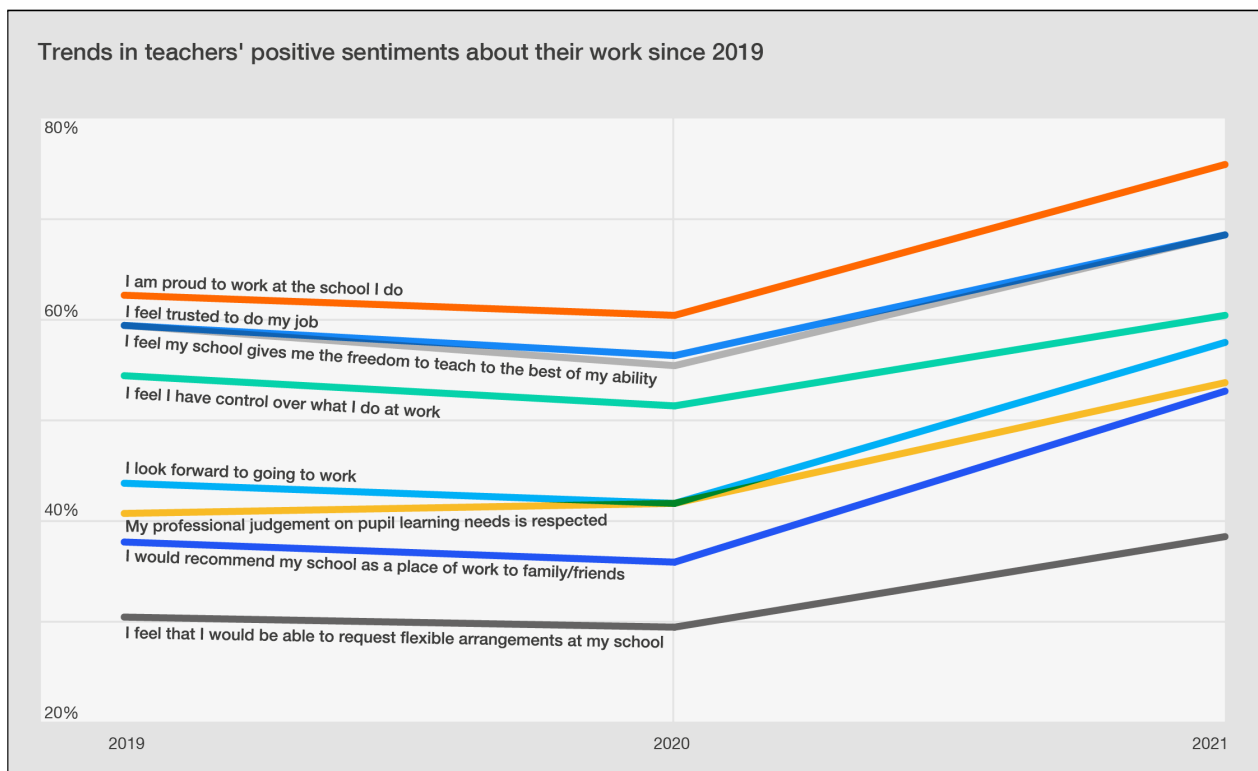

Figure 2: Trends in teachers' positive sentiments about their work since 2019
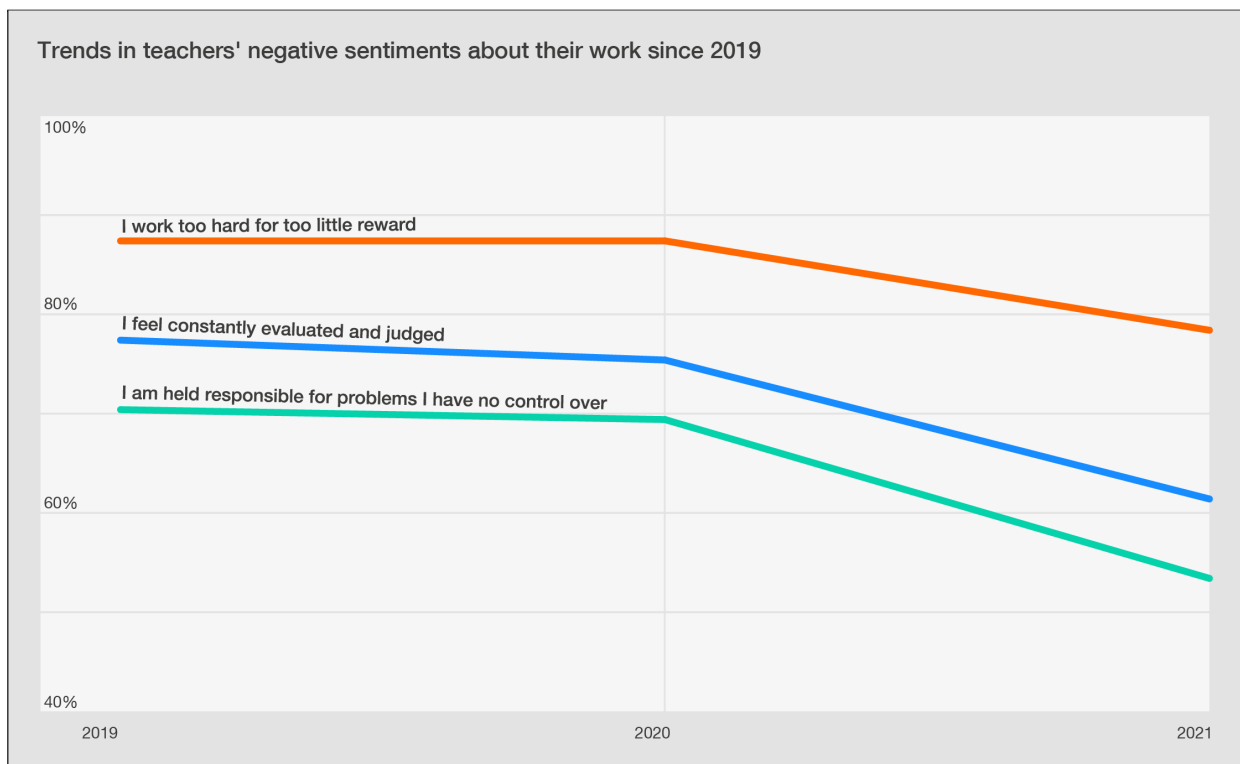
Figure 3: Trends in teachers' negative sentiments about their work since 2019

Teachers' estimates of learning loss

Background

There is growing evidence about cumulative losses of learning, and a reduction in the physical and emotional health of all children, but particular concern that these problems may be concentrated in children from low-income households. Improved understanding of the extent to which school closures influence the life chances of less well-off children could support informed policy making around post-pandemic recovery, and also inform decisions around future school closures. However, risks are difficult to assess because schools' 'levelling-up' function operates across several dimensions.

Existing data

School closures and emotional health

Reduced access to play and to friends may impair mood, and several surveys have indicated a reduction in the mental health of children during lockdown, and particularly symptoms of depression.[29] The risk of mental health problems in children is socially patterned, and pre-pandemic rates in the least well-off 20% of households were reported to be four times that of children in the most well-off

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[29] Archives of Disease in Childhood (2020), 'Longitudinal increases in childhood depression symptoms during the COVID-19 lockdown'; Barnardo's (2020), 'Briefing for MPs & Peers: Children's mental health and Covid-19'; Girlguiding (2020), 'Early findings on the impact of Covid-19 on girls and young women'

20%.[30] It is not yet clear whether this gap will widen further as a result of the pandemic.

School closures and physical health

Physical health may also suffer because the structured nature of a school day reduces behaviours that cause obesity. Children who have a tendency to obesity put on weight and become less fit over the summer holidays as they take less exercise, have more screen time and eat higher calorie foods,[31] and there is concern that the lockdown will worsen the current childhood obesity epidemic.[32] Data from the Bradford longitudinal study highlighted that pandemic-related sedentary behaviour was patterned along ethnic lines: 34% of white British, but only 23% of children from other ethnicities had met guidelines for physical activity.[33]

For other children, hunger is the problem, with 1.4 million children in the UK currently eligible for free school meals that were not provided during school closures.[34] Hunger is clearly related to social and economic factors. When a voucher replacement scheme failed, it was reported that some schools and teachers filled the gap and distributed food directly to families.[35]

Places to study and access to the internet

Material disadvantage also reduces access to online learning opportunities, in particular devices for accessing the internet, bandwidth and a quiet place to study.[36] A report by the Institute for Fiscal Studies (IFS) early in the pandemic confirmed this gradient and reported that one in 10 primary school students and one in seven secondary school students had either no device for accessing the internet or relied on a mobile phone, and that 10% of secondary students and more than 20% of primary school students had no dedicated study space.[37] Any claim to having 'internet access' should be interpreted with caution, as for some children it meant a parent's mobile phone with very limited data allowance.[38] During the first lockdown, teachers indicated that around 25% of their pupils had inadequate access to the internet.[39] These problems are compounded by the loss of public spaces such as libraries that offer spaces to work in and wifi access;[40] resources that are particularly

[30] Centre for Mental Health (2015), 'Children of the new century: Mental health findings from the Millenium Cohort Study'

[31] International Journal of Behavioral Nutrition and Physical Activity (2017), 'Understanding differences between summer vs. school obesogenic behaviors of children: the structured days hypothesis'

[32] Paediatrics and Child Health (Oxford) (2020), 'The indirect impact of COVID-19 on child health'

[33] BIHR COVID-19 Scientific Advisory Group (2021), 'Children's physical activity during Covid-19 from the Born in Bradford Cohort'

[34] UK Parliament (2020), 'Free school meals'

[35] Human Rights Watch (2020), 'Children in England going hungry with schools shut. Uneven UK approach for Covid-19 doesn't guarantee children's right to food'

[36] Institute for Fiscal Studies (2020), 'Inequalities in children's experiences of home learning during the COVID-19 lockdown in England'

[37] ibid.

[38] British Journal of Educational Psychology (2020), '"Like a rug had been pulled from under you": The impact of COVID-19 on teachers in England during the first six weeks of the UK lockdown'

[39] National Foundation for Educational Research (2020), 'Pupil engagement in remote learning'

[40] The Oxfordshire Digital Inclusion Project (2020), 'Covid-19 is increasing digital inequality: We need human connectivity to close the digital divide'

important to those less digitally well off.[41]

However, even when children have access to good bandwidth and devices for accessing the internet, a digital divide may result from differences in the way the internet is used. 'Meaningful internet use', or the way in which the internet is used to 'mobilise information resources, to be able to address a range of everyday goals and concerns'[42] follows other patterns of disadvantage[43]. The IFS report also noted a gradient between household income and both the amount of time spent studying and the types of resources used, which put low-income children at a disadvantage.[44]

Unequal 'learning slides' when schools close

There are also more subtle disproportionate impacts for the less well-off of missing school. Children's opportunities to learn outside of school are limited by their home environment, and a 'summer slide' is recognised, where the learning of disadvantaged children tends to stagnate during summer holidays, while better-off children continue to learn.[45] In the United States, the summer slide is thought to account for almost two thirds of the achievement gap between income groups.[46] Taken together, the data strongly indicates that children from some communities are more vulnerable to school closures than others, and that several factors contribute to this. Our combined dataset allows us to examine in which schools and sectors learning losses are likely to be the greatest.

Estimates of learning loss: survey findings

Which children have experienced the greatest learning losses?

Overall, 59% of teachers felt that at least half of their pupils had lost ground academically over the previous 12 months. This was particularly the case with younger children: 63% of primary school teachers felt at least half the class had lost ground, compared to only 43% of sixth form teachers.

There was also a gradient with the deprivation index of the school postcode: estimates were 70% for schools in the most deprived postcodes, compared to 48% for the least deprived. Teachers' estimates of learning loss, lack of completion of set work and underlying reasons for poor engagement are compared with demographic data from the school's postcode in Figure 4.

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[41] Telematics and Informatics (2012), 'Digital inequalities and implications for social inequalities: A study of Internet penetration amongst university students in South Africa'

[42] Journal of Communication (2016), 'Toward meaningful connectivity: Using multilevel communication research to reframe digital inequality'

[43] Educational Review (2012), 'Learning online? Educational internet use and participation in adult learning, 2002 to 2010'

[44] Institute for Fiscal Studies (2020), 'Inequalities in children's experiences of home learning during the COVID-19 lockdown in England'

[45] Journal of Education for Students Placed at Risk (JESPAR) (2012), 'Counteracting summer slide: social capital resources within socioeconomically disadvantaged families'

[46] ibid.

Learning loss and engagement with remote learning
Overall

Half or more of the class lost ground	Percentage of remote class handing in work	Lack of devices having large impact on at least a few pupils	Lack of internet having large impact on at least a few pupils
58.9%	55.2%	55.7%	51.6%

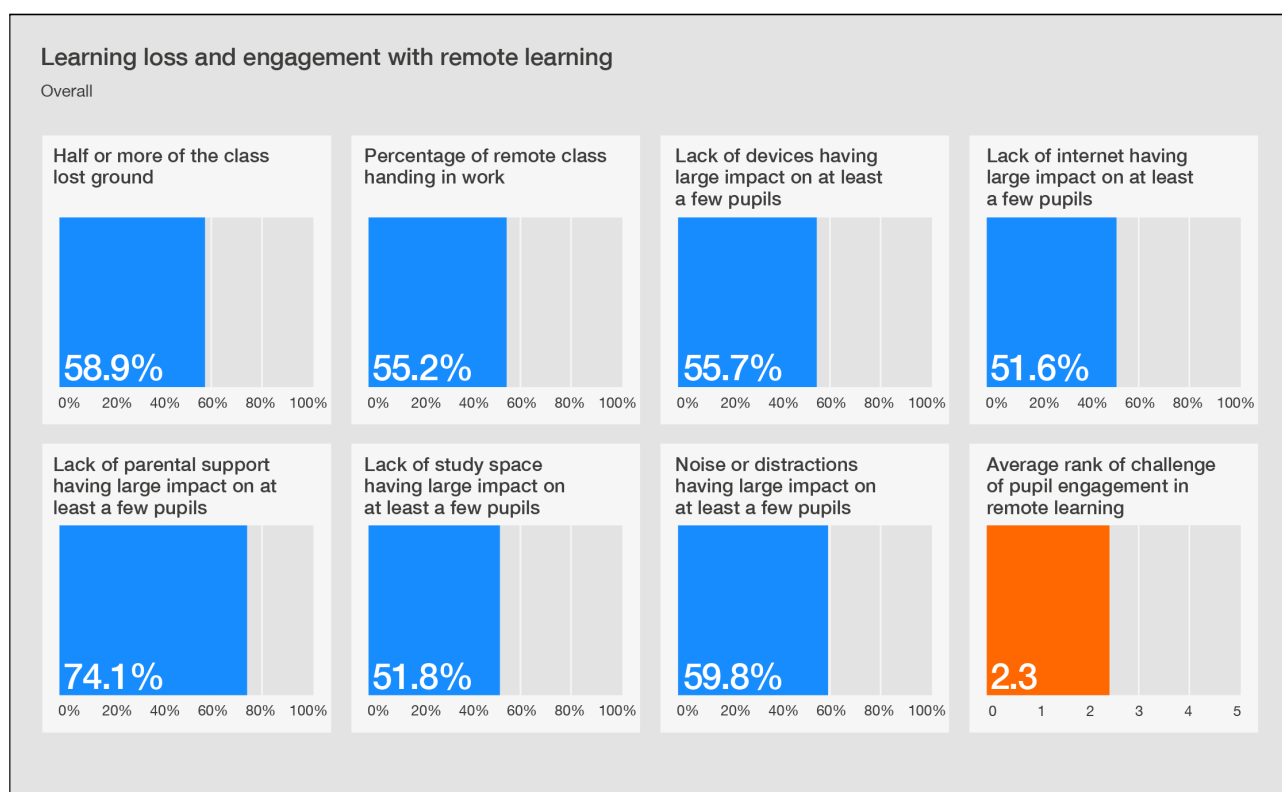| Lack of parental support having large impact on at least a few pupils	Lack of study space having large impact on at least a few pupils	Noise or distractions having large impact on at least a few pupils	Average rank of challenge of pupil engagement in remote learning
74.1%	51.8%	59.8%	2.3

Table 5: Learning loss and engagement with remote learning.

View results by school demographics using the interactive tool.

Reasons for lack of engagement

Overall, 65% of teachers felt that their class was engaging less well with remote learning than with face-to-face learning. Teachers reported that 55% of children had handed in their last piece of work and, while this was similar across age groups in mainstream education, it was noticeably lower (46%) in special education classes.

Teachers were asked to rate the contribution of various factors to engagement with remote learning as having a 'high' or a 'low' impact on 'a few' or 'many' pupils. Parental support was identified as the most important factor: 74% of teachers ranked a lack of parental support as high impact on at least a few pupils. This was lower in independent schools (53%) than in state schools (76%), and also varied by deprivation index, with estimates of 79% for schools in the most deprived postcodes, compared to 69% in the least deprived postcodes. Data on perceived causes of poor engagement in schools in the most deprived postcodes is shown in Figure 3 and compared with overall findings. The smallest difference between schools in the most deprived postcodes and the average is the level of parental engagement.
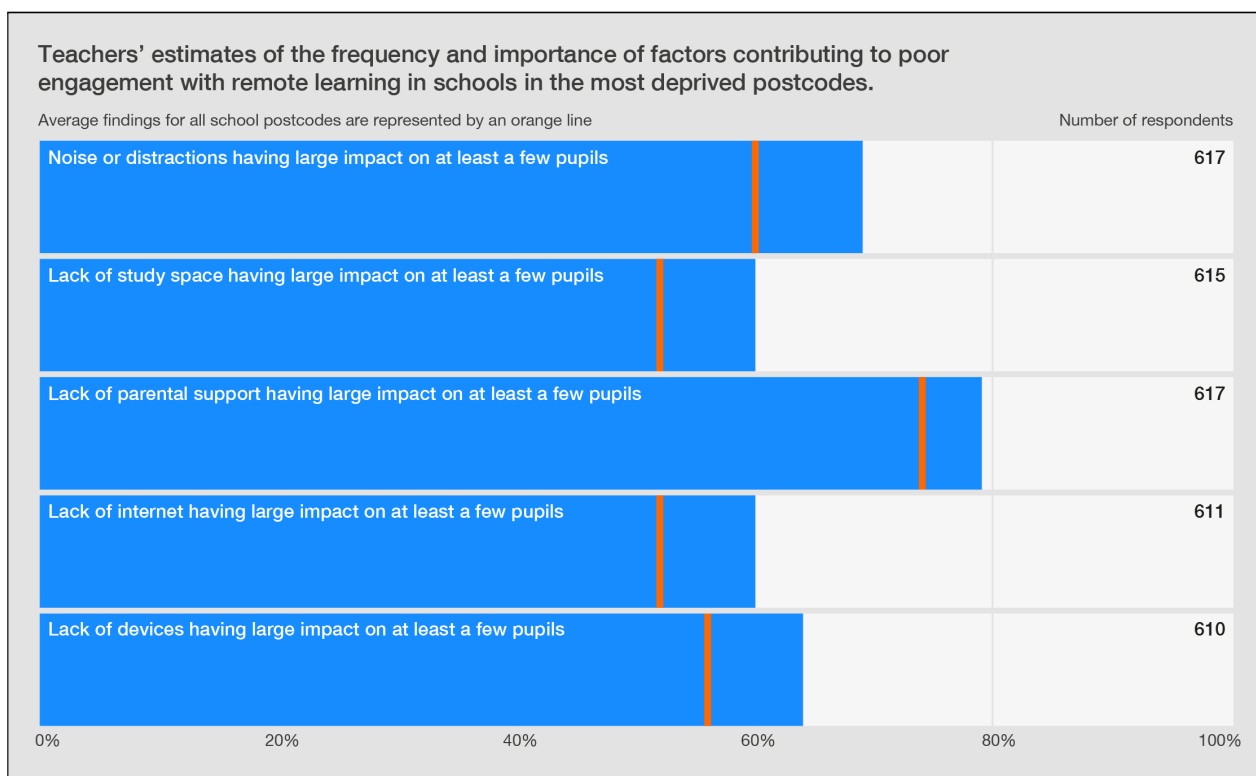
Teachers' estimates of the frequency and importance of factors contributing to poor engagement with remote learning in schools in the most deprived postcodes.

Average findings for all school postcodes are represented by an orange line

Number of respondents

Noise or distractions having large impact on at least a few pupils	617
Lack of study space having large impact on at least a few pupils	615
Lack of parental support having large impact on at least a few pupils	617
Lack of internet having large impact on at least a few pupils	611
Lack of devices having large impact on at least a few pupils	610

0%   20%   40%   60%   80%   100%

Figure 4: Teachers' estimates of the frequency and importance of factors contributing to poor engagement with remote learning in schools in the most deprived postcodes. Average findings for all school postcodes are represented by an orange line.

Conclusions from the survey

During the partial school closures of 2020-21, about half of all teachers took on a dual role, providing classroom as well as remote teaching. Primary school teachers were particularly likely to have taken on this dual role, probably because of their role in providing day care for the children of key workers and vulnerable children.

Over 60% of teachers felt that their workload had increased over the past 12 months and the average hours of work for full-time teachers was just over 52 per week. Despite this, a smaller proportion of teachers said they were planning to leave the profession than in the previous two years, and indicators suggest that this was related to more professional autonomy during the pandemic.

Teachers' estimate of learning losses indicated that these are likely to be substantial in all groups of children, but there was particular concern from primary school teachers, and teachers from schools in more deprived postcodes. A lack of support from a parent or other adult was the most commonly identified factor associated with poor engagement with online learning. Learning loss is linked to a number of social and economic measures at the school postcode level.

Data gaps

The data reported in this study has highlighted what we can tell about how teachers' working lives changed during the pandemic and in which groups of children they are most concerned about learning loss. This report can be seen as an illustration of how open data can inform research and policy making, but it is important to assess the availability, reliability, fairness and transparency of the available public data. We need to ask whether the data we have is the data we need to answer the questions we have.

Representativeness

Data inclusion

When data is used for decision making, it is important to consider whether it fairly represents the groups it is thought to describe, or whether some groups have been excluded. For example, Gypsy and Traveller communities were included as an ethnic category in the UK census for the first time in 2011, meaning that before then, their health and social indicators had not been used in census-driven decision making.[47] Groups need to be visible in the data in order to be represented by it, and it could be argued that, by assessing social data at the level of a school's postcode stem, we have averaged out the needs of distinct groups of children and denied them representation. However, the advantage of representing distinct groups and categories of children needs to be balanced against the risk of assigning individuals to more granular categories and making assumptions about them that are discriminatory.

In this report we have deliberately not attempted to identify distinct groupings that could be used to characterise a particular child. Instead, we highlight the concentration of educational losses in primary schools, in special education and in schools located in deprived postcodes, which may need additional resources as post-pandemic recovery unfolds.

How well do respondents represent the teaching workforce?

The low response rate of the survey was not unusual, but it does raise questions about the representativeness of the data. We tried to mitigate this by weighting responses by demographic factors. However, the possibility always remains that teachers who responded to the survey differed systematically from those who did not. It might be argued, for example, that teachers would be more likely to respond to the survey if they had had a particularly positive experience during the pandemic or, alternatively, if they had an axe to grind. Responses may also be

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[47] UK Parliament (2019), 'Research briefing: Gypsies and Travellers'

influenced by the perceived purposes of a survey which, in this case, could be seen as a tool for lobbying and improving employment conditions.

It is difficult to mitigate against these risks in the present report, but it does raise a broader question about public perceptions of data use and willingness to contribute data – something that is addressed further below.

Data quality

Granularity of data categories

Surveys that ask workers to rate their job satisfaction within limited response categories are blunt instruments for assessing the mood and motivation of the workforce. Technically, it is possible to collect more detailed information about workers' performance, engagement and motivation by scraping employees' professional and personal communications and analysing them using natural language processing. While there has been a rise in the use of commercial workforce analytics that perform these functions in the private sector,[48] the use of this sort of digital surveillance is intrusive, may lead to discriminatory profiling of individuals, and may itself change the behaviour it seeks to monitor.

A similar argument could be made about drawing conclusions about children's learning losses and the determinants of learning engagement from teachers' opinions. More granular data about how individual children are learning online could certainly be gained from analysing their performance in schoolwork, or even clickstream data to see what material individual children are accessing and how long they spend on it. However, we also have to be alert to the ethics and adverse consequences of data collection itself – such as increased testing or invasions of privacy – and how this might feed back into changes in behaviour, such as teaching to the test or the use of mouse movers to simulate activity. Data collection should be minimised: it should be enough to answer the questions we have, rather than everything we could collect. In this context, we believe our approach of using anonymised and aggregated data published as open data, combined with other publicly available datasets, meets conditions for appropriate and useful granularity.

Timeliness of data

Some of our contextual data was taken from sources that were not concurrent with the survey. This is particularly the case for data about communities that relies on census data. This report was written in a census year, meaning that the most recent published census data is 10 years old. Real-time information about communities is almost certainly available to those commercial entities that collect

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[48] Social Sciences (2019), 'Big data and human resources management: The rise of talent analytics'

personal digital data, but this is not made available for public use.

Challenges to geographical matching

One of the strengths of this report is the linking of teachers' views to contextual data about their school's community. However, this came with challenges. A postcode stem was used to identify a school's approximate location. A full postcode would have been more precise, but would have identified individual schools. Postcode stems were then mapped as well as possible to census areas. Direct matching would have been preferable, but it is unlikely that teachers would know the lower super output areas of their schools. Common standards for geographical mapping that are recognised by users would make the analysis of data from multiple sources more accurate.

Data infrastructure

Data use and communication

'Data infrastructure' consists of a combination of data assets, technology, processes and organisations. The use of data to solve problems and the communication of that use to participants and the public is an important part of data infrastructure,[49] and can create a sense of public ownership and control of data. The 'citizen science' movement has been very successful in mobilising crowd-sourced data to monitor environmental issues,[50] indicating that there is an appetite for contributing public data when it is seen to be of value.

If workforce surveys are to be used to monitor teachers' professional opinions, it is necessary to make the results as representative as possible and so the low response rate was a concern. Informal enquiries suggested some survey fatigue among teachers, who have been asked to contribute data to several questionnaires over the course of the year. It seems likely that many of those invited to participate will have seen the survey as another gratuitous data collection exercise and decided not to take part. Participation in future surveys of this sort may be promoted if teachers can see that their collective views and concerns have been noted and have informed policy. This places an onus on those designing surveys to ensure that the data they collect is directed towards problem solving, and an onus on data users to communicate this use to contributors.

Teacher workload and retention

Teacher retention is likely to be particularly important as children recover from the damage to their learning and well-being caused by school closures. Teachers in this survey indicated that their workload had increased and they were working

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[49] Civil Service Quarterly (2019), 'An interview with John Pullinger, former UK National Statistician'
[50] Nature(2018), 'No PhDs needed: how citizen science is transforming research'

over 50 hours per week on average. Data about workload is available from the teacher workload survey that was carried out in 2016 and 2019, but there may be an argument for repeating this survey more regularly or incorporating some of its measures into other tools, such as the school workforce survey.

Data from the NASUWT survey indicated that substantial learning losses are probable across all groups, but that these are likely to be concentrated in primary schools and in schools in less well-off postcodes. It follows that teacher recruitment and retention is particularly important in those sectors and areas, and should be monitored. Currently, teacher retention data is only available at a national level. Making it openly available at the level of different sectors and regions would increase the transparency of educational management and allow civil society organisations and interested individuals to determine whether there are areas where low teacher retention represents a risk to schooling and where additional support may be needed.

Better data on teacher well-being is also required to monitor the impact of education policies on teacher motivation and retention. We have a great deal of information about the performance of children and schools, but the consequences of this approach to performance management on the teaching workforce also needs to be measured and critically assessed so that balanced decisions can be made about education policy. Common metrics of teacher well-being and job satisfaction, and measurement of trends, are necessary.

Conclusion

Researchers, policymakers and citizens who are interested in education have access to a great deal of data about the performance of children and schools from the [education statistics service](), and about teacher numbers and characteristics from the [school workforce survey](). What is missing is reliable, systematic data on the well-being and professional views of teachers.

In this report we explored how open and publicly available data can be combined and used to shed light on the impact of the pandemic on the working lives of teachers and the learning and well-being of the children they teach. The data highlighted particular areas of concern regarding children's learning losses, which are likely to be more severe in primary schools and in schools in low income areas, and the surprising finding that although teachers had to work harder and were more stressed than usual, they felt more positive about their work and were less likely to consider leaving the profession. We also discussed the limitations of this data, in particular the low response rate to the survey, and the difficulty matching datasets based on geography.

Data is necessary for good public decision making, and the nature of that data affects the quality of those decisions. Timely data enables timely decisions and action. Granular data – for example about different areas or different school settings – supports targeted interventions. Data from multiple sources – including that created by communities and professional bodies to describe and evidence their experience – helps to create a rich and nuanced picture.

Opening data, and particularly that used for important decisions, supports transparency and accountability around those decisions, and enables policymakers, researchers and the public to understand and question them. Open data can also help prioritise and support action, such as the provision and targeting of support services by civil society and businesses.

But no data is perfect, and it is important to surface how it was collected and processed, and recognise, as we have in this report, its limitations, so that it can be critiqued and understood in context.

In education, as in many sectors, we are still far from having the data infrastructure we need. Teachers are not alone in wanting their opinions and experiences to be taken into account when decisions are made about their working lives. The pandemic has shown us the importance of timely data in a rapidly changing world, and how much collective knowledge is held within institutions like the NHS, or already available to organisations like businesses, unions and civil society organisations. Making data available, in privacy-protecting, timely and systematic ways, means we can harness that collective knowledge for the collective good.

Technical Appendix

Survey data processing and cleaning methods

Data cleaning

A series of data cleaning processes were carried out on the raw survey data.
These included:

- School postcode outcode or stem (for example SW4) – some respondents entered full postcodes and others added characters or spaces, and where possible, these were cleaned to provide a valid outcode. Overall, 3,096 postcode outcodes were identified and matched to external datasets (see below).
- Education sector – some respondents did not tick which sector of education they teach in, but wrote something in the 'other' box. These were recategorised into one of the defined sectors where relevant. Due to small numbers, teachers in sixth form colleges, further education colleges or higher education were combined into a 'post-16' category. Where more than one option was ticked, only the first was taken to avoid double counting respondents.
- Ethnic group – some respondents did not select any ethnic group but wrote one in the 'other' box. Where clear, these were reclassified as one of the ethnic groups. Where more than one option was ticked, only the first was taken to avoid double counting respondents.
- Position – some respondents did not select a position (for example middle manager) but wrote one in the 'other' box. Where clear, these were reclassified as one of the defined positions. Due to small numbers, headteacher/deputy headteachers and senior management team members were combined into a senior manager category.
- Working pattern – some respondents did not select a working pattern (for example temporary part time) but wrote one in the 'other' box. Where clear, these were reclassified as one of the defined groups. Where more than one option was ticked, only the first was taken to avoid double counting respondents.
- Invalid responses – for two questions (Q15 and Q25) we excluded values that were impossible or extremely unlikely. For example, for Q15, we excluded any responses that stated that the number of pupils that had submitted work was larger than than the total number in the class. Similarly, for Q25, we excluded any respondents who said they worked full time and worked fewer than 20 hours per week.

Missing responses

Some respondents did not provide answers to every question. Rather than using imputation to create artificial responses , non-responses were excluded from the analysis for each question. This means that, for each question, the analysis shows the percentages of all those who answered that particular question, not of all survey respondents. For example, where a question had possible answers of 'Yes, 'No' and 'Not sure', we report the number who said 'Yes' as a percentage of the number who said 'Yes, 'No' or 'Not sure'.

Weighting

Comparison to published Department for Education data on the teacher workforce across all state-funded schools in England revealed that the survey sample was not representative (see Table 2). We therefore applied weighting to the survey responses to ensure that results were representative of the teacher workforce. The weights were calculated based on the school sector respondents teach in, their age band and their gender, since the combination of these variables was available from the school workforce census. In particular, this increased the weighting on the responses of younger survey respondents and those who taught in primary schools. To avoid applying large weights to small groups of respondents, regional weightings were not applied.

The teacher workforce data used is only available for state-funded primary, secondary and special schools. Therefore, independent school teachers and those working in post-16 institutions remained unweighted. Additionally, we did not re-weight the responses to each individual question, so the sample for each individual question may not reflect the teacher workforce as a whole.

Linking to external datasets

We used the school postcode outcode reported by the respondent to link the survey data to a selection of external datasets to provide additional context for analysis (see Table 1). The external data used was published at output area (OA), lower super output area (LSOA) or middle super output area (MSOA) level, and hence could not be directly mapped to the postcode outcode stated by respondents. To create data for the postcode outcodes, we calculated the proportion of each outcode area that is in each OA, LSOA or MSOA. We used these proportions to create weighted re-aggregations of each measure for each postcode outcode. Every outcode was then ranked and split into quartiles for each measure.

Statistical significance

In order to draw conclusions about sub-groups of teachers within the survey, we tested whether their average response (mean) for each question was statistically significantly different to the average among all other respondents. Statistical significance was calculated using a two-tailed t-test and groups significantly different at the 1% and 5% levels were highlighted.

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