



CAMBRIDGE

EDUCATE

Shock to the system: lessons from Covid-19

Volume 2:
The evidence



**TRANSFORMING
SOCIETIES THROUGH
EDUCATION**

Abstract

In March 2020, Covid-19 shook education systems across the globe. The repercussions on education were both disruptive and transformational – or at least potentially transformational. In the UK and across the world, the Covid-19 pandemic revealed structural challenges and inequalities. It precipitated a rate of technology use in education that would normally have taken many months or even years. Whether this transpires to be a one-off, or the start of a chain of events stretching into the future, it has presented a rare opportunity to observe, collect evidence, and to learn.

This report is an analysis of multiple data sources collected over several months of engagement with educators, parents, and other educational stakeholders. It maps the main challenges, opportunities, support systems, and uses of educational technologies in the English education system since Spring 2020. This evidence volume, and the associated implications volume, reflect our findings and offer a list of recommendations which are relevant to the UK, and may also inform educational systems internationally.

Specifically, we identify six interconnected challenges, from which we will extract in the Implications volume six evidence-informed sets of implications. The six themes are **Remote emergency teaching; Teacher skills development; Parental engagement; Disproportionate disruption; Inconsistent infrastructure;** and **Trust**. Many of the challenges behind these six themes are a direct result of the disconnection in the existing Educational Technology (EdTech) ecosystem, which has left teachers without access to reliable evidence about the efficacy of options available to them, and the range and impact of the different pedagogical delivery models they could adopt. This is the same siloed ecosystem that has also left the EdTech industry without access to a clear understanding of the needs, opportunities, and challenges that are faced by learners, parents, teachers, and headteachers.

In addition, this report also identifies five main educational stakeholders' personas which we describe and name as the earth movers, the space seekers, the fire tamers, the water pilots, and the aeronauts.

In the associated Implications volume, we offer practical suggestions for improvement, tailored to these personas. Our listed recommendations address both the short- and the long-term challenges we face. Primarily, our analysis suggests that education systems must create a connected EdTech ecosystem of multi-stakeholder communities. Educators, educational leaders, researchers, parents, and EdTech developers must be better connected to bridge the gulf that is often created by their current rather isolated existence. Specifically, secure and evidence-based channels of communication and collaboration must be provided between the community of teachers, learners, and parents who use technology for education, the community of researchers who investigate technology's design and use in education, and the sector that creates technology for use in education. These communities must be incentivised and enabled to connect.

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Chapter 1: Introduction

On 18 March 2020, the UK government announced the closure of all schools until further notice. Two weeks earlier, on 3 March 2020, when teachers were asked on Teacher Tapp¹ about their ability to use technology to teach remotely if schools were to be closed suddenly, only

42% to 64% confirmed they would be able to do so successfully. Teachers working in private schools were more confident in their ability to transform teaching practices (82%) compared to only 55% of their counterparts from state schools (see Figure 1 below).

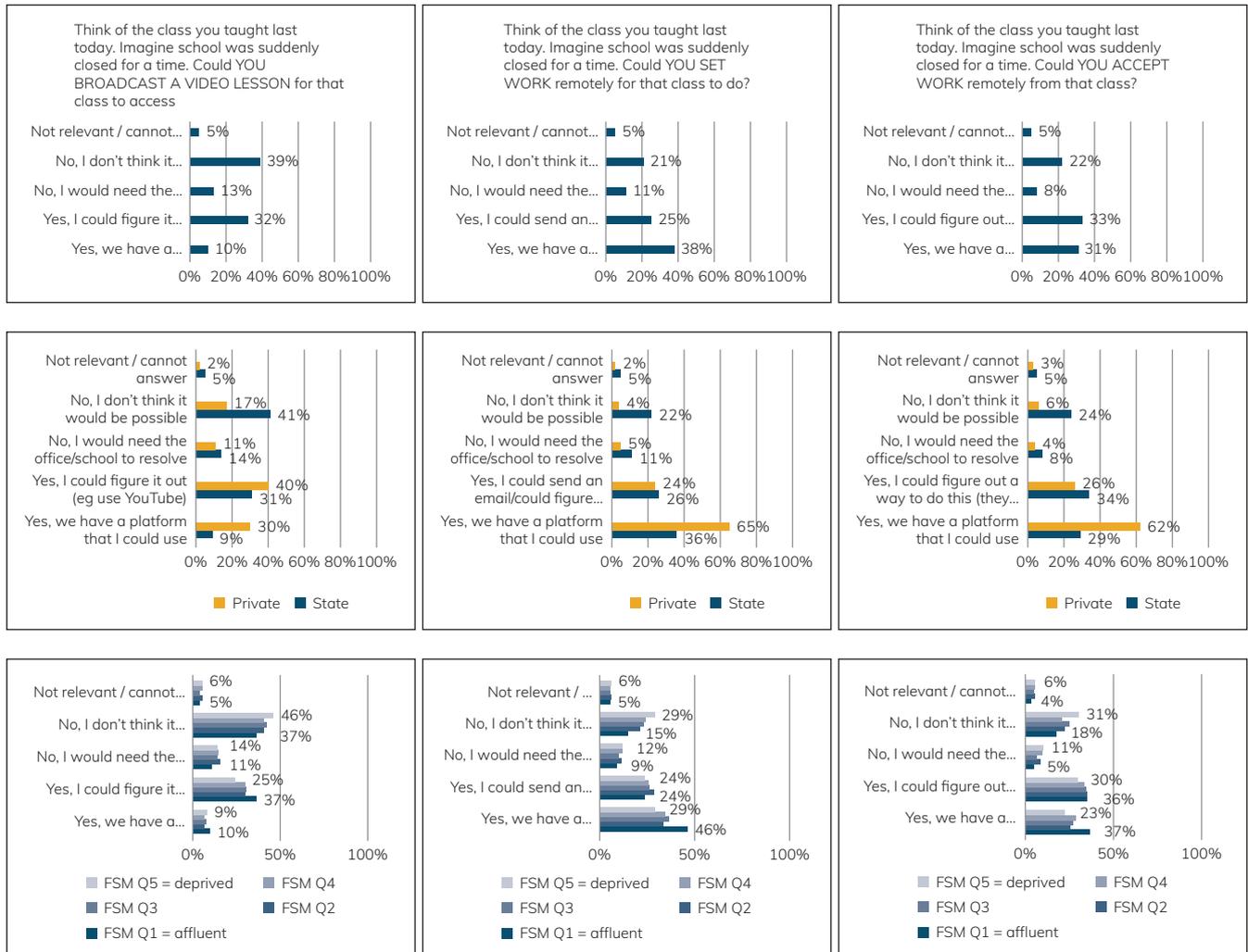


Figure 1: Teachers' sensing of their ability to teach remotely (Source: Teacher Tapp 3.3.2020, n=6,375)

¹ <https://teachertapp.co.uk/>

Five months later, in August 2020, the increased use of technology in schools had become a reality. When asked if they would change the way they

use technology, many teachers stated they would, especially around managing homework (60%) (see Figure 2 below).

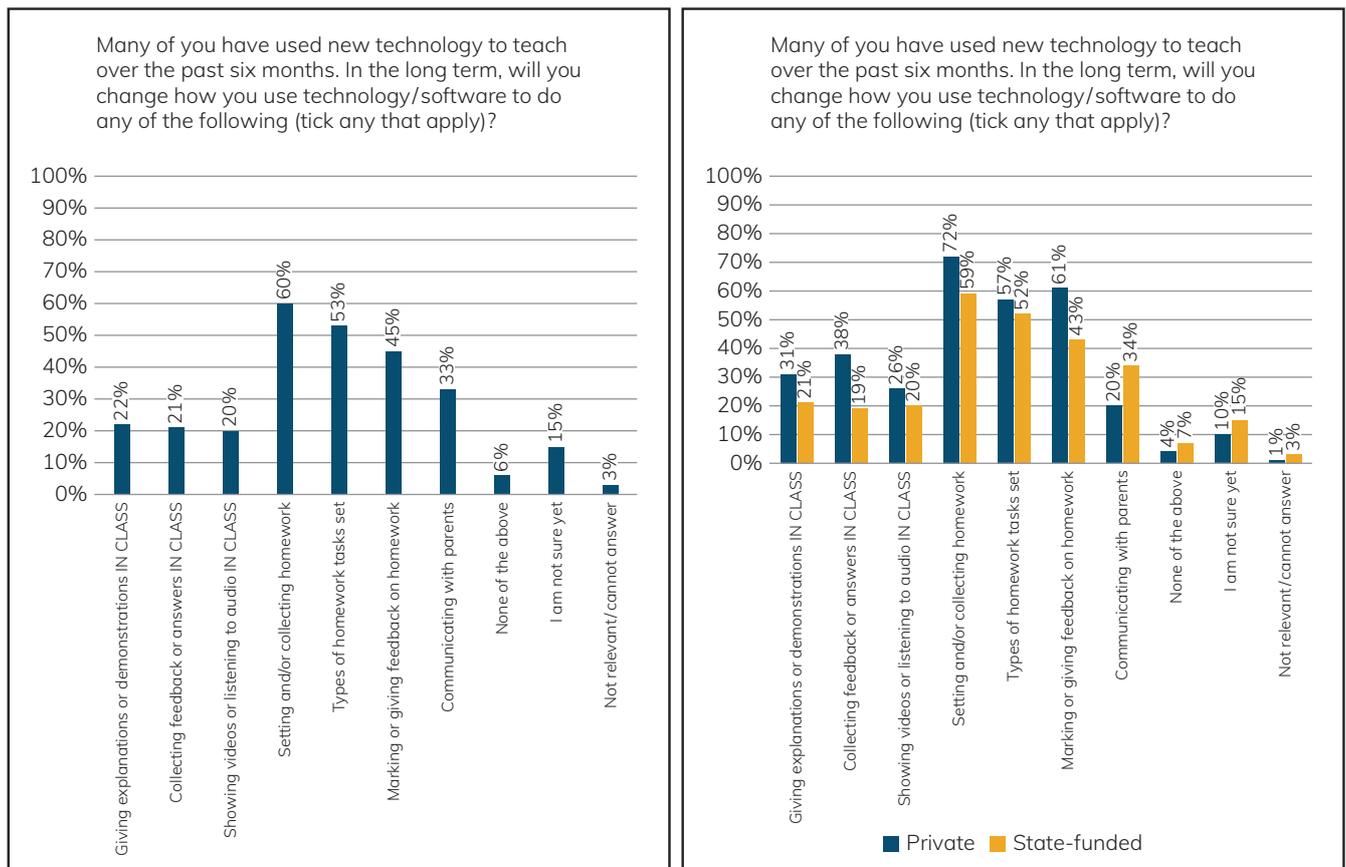


Figure 2: Teachers' feedback on changes they would make in the way they use technology (Source: Teacher Tapp, 8.2020, n=6,909)

A similar finding emerged in our own interviews. The school lockdown had enabled some teachers to observe first-hand how much easier it was to manage, mark, and provide immediate feedback to students when a suitable technology is used.

The Covid-19 crisis has affected many aspects of our society. Specifically, it has illuminated many existing structural barriers and gaps in the existing English education ecosystem. For one, the importance of schools and childcare to the infrastructure of society was brought to the fore as parents juggled work and schooling their children. As education moved out of schools and into students' homes, families needed to take on

multiple roles, which revealed many structural gaps in the existing education ecosystem (Cullinane & Montacute, 2020). Schools, meanwhile, had to implement a range of measures to be able to continue educating students and to protect them from the impact of the pandemic. Children's well-being was at risk as they were required to stay away from friends, some of their family members, and the support of teachers and schools. Children living in homes without a suitable internet connection also risked being excluded from lessons, from interacting with their friends, and from many educational opportunities (McNeil et al., 2020).

In this report, we review the impact of the pandemic-related restrictions on school education in England and link it to the role of technology and digital access in providing children with a sustainable education during a crisis.

In the chapters that follow, we present the evidence and findings from our research, conducted over the past eight months. Chapter 2 on Emotions, Opportunities and Concerns, maps our main findings, contextualised within a literature review. It considers stakeholders' sentiments, the main opportunities and the main concerns associated with the change to the educational system caused by Covid-19 amongst the studied population. Chapter 3 presents the six main themes arising from the data, and Chapter 4 offers evidence about the EdTech being used and the EdTech companies themselves. In Chapter 5, we discuss our analysis of schools' leadership and teacher behaviour. We present five educational personas, for which we make recommendations in the Implications volume about the support system we would advise for each: the earth movers, the space seekers, the fire tamers, the water pilots, and the aeronauts. Finally, Chapter 6 provides details about our methodology including the surveys, interviews, and Twitter data harvesting.

The second part of this report is the associated implications volume, comprising a summary of the main findings, experts' commentaries on chosen topics, and evidence-based recommendations and best-practices associated with the topics raised in this volume.

Chapter 2: Emotions, opportunities, and concerns

The Covid-19 crisis hugely disrupted the learning, assessment, and examination of children and young people in the UK, and globally. The move to remote learning across many schools required considerable changes to how schools normally operate. School leaders needed to find ways to support their teachers, students and families to adjust to the new environment and make sense of constantly changing government guidance. Within a few months of the first lockdowns in Europe, a substantial body of literature seeking to understand the educational implications of school closures and disruption was starting to build. Studies investigated how and what children learnt during and after the schools' closure, how schools coped with teaching during times of lockdown, and which children were most or least advantaged. We include

the evidence from many of these studies in this report, which sets the context within which this report should be read.

How did people feel?

We asked adult educational stakeholders (EdTech developers, educational leaders, educators, and parents) to score their personal feelings during school closure. The feeling score was presented on a scale of 0 to 100, where the left side of the scale read 'Poor – I don't feel I am teaching/leading/parenting as well as usual', the middle read 'neither better nor worse than usual' and the right side read 'Great – I am teaching/leading/parenting better than usual'. The respondents demonstrated a general decline in their feeling score as seen in Figure 3, with EdTech developers showing the steepest decline and educational leaders showing the most stable decline.

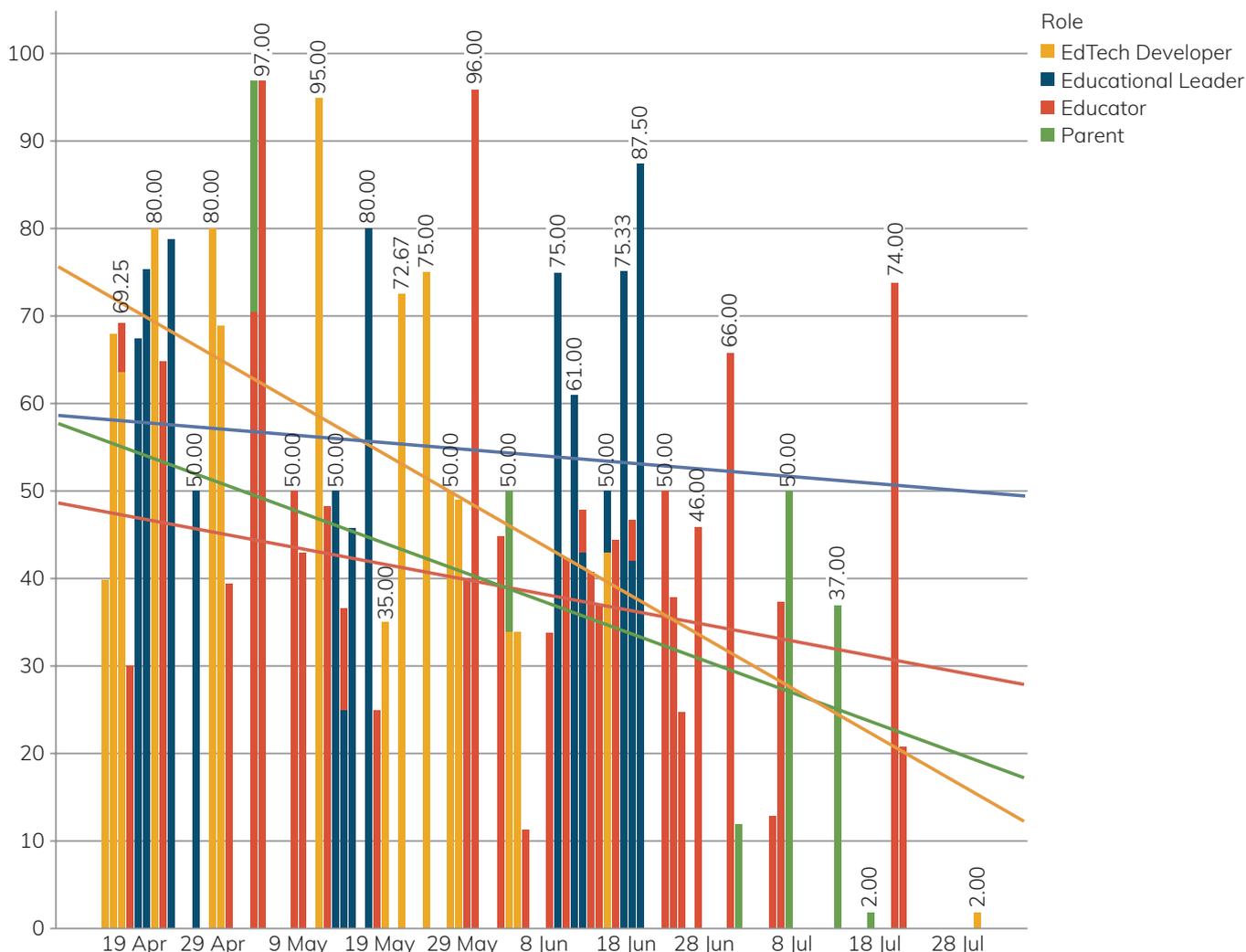


Figure 3: The average score of feeling across the months of April to July on a scale of 0 to 100, for each role

Figure 4 illustrates our respondents' self-reported enjoyment level from remote teaching and learning. The data indicates that parents were the happiest stakeholder group and that infant schools' stakeholders felt the most challenged by the situation. Across the board, interestingly, state schools' stakeholders reported lower levels of enjoyment compared to their independent school peers. None of our SEND stakeholders (which was a small group) reported enjoying the remote mode of teaching and learning.

To complement the data about feeling and enjoyment, we collected data about educational stakeholders' feelings of optimism during July and August. Figure 5 illustrates the average scores from respondents about their feelings of optimism that the school system will cope when the new

school year begins in September 2020. The options available to respondents were: 1= I am pessimistic and fear at least some parts of the English educational sector will struggle without more support and better resources; 2= I am very concerned that the educational system will struggle to cope with some challenges, and I am not sure that the right support system is in place; 3= I am somewhat worried that the educational system will struggle to cope with some challenges. However, I am reasonably confident that the right support system is in place for next year; 4= I am optimistic and think the educational system will cope with making up any academic deficits in learners.

Similar to their feelings about how the English education system will cope in the new school year, adult educational stakeholders' optimism also

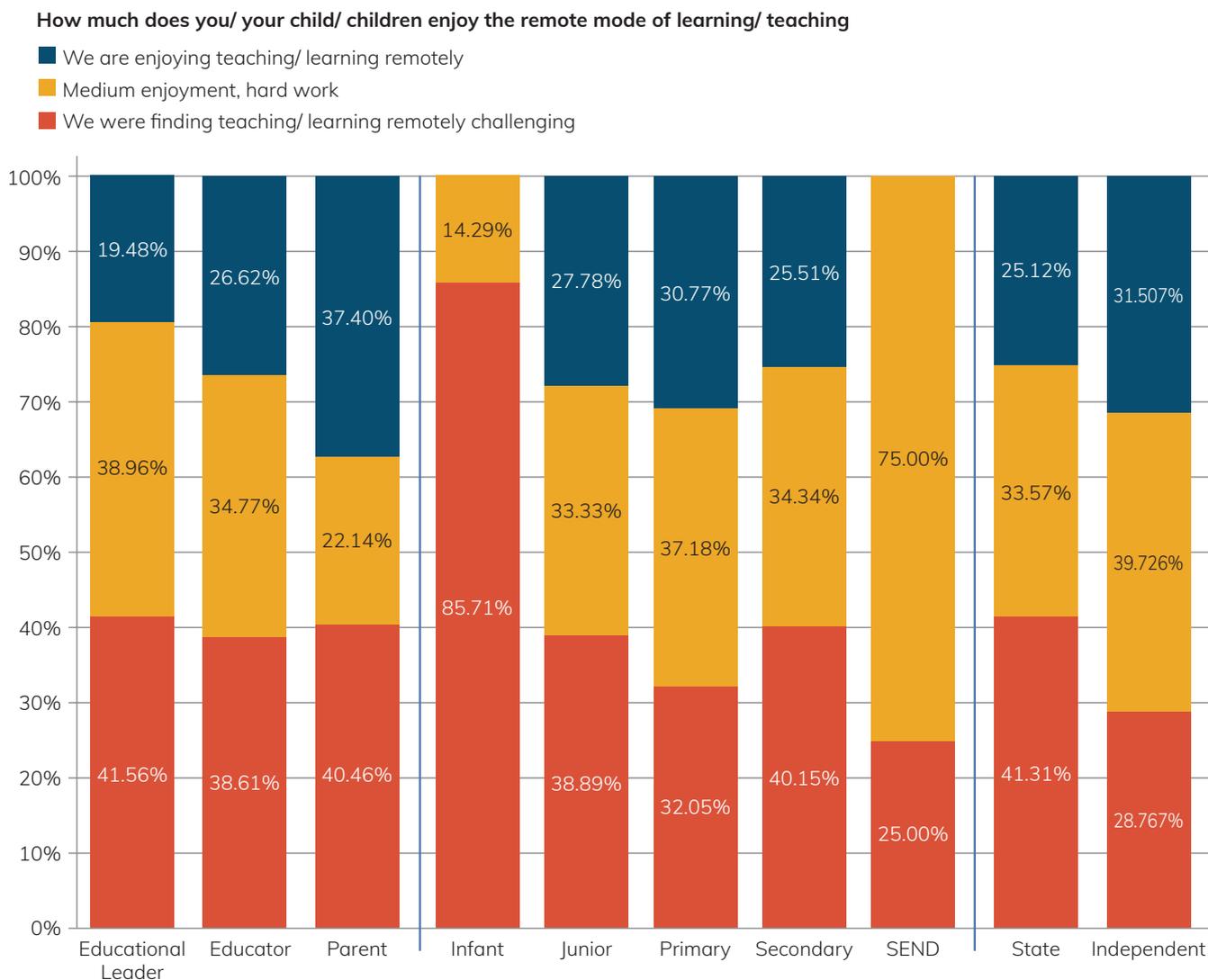


Figure 4: Breakdown of how much different respondents enjoyed remote teaching and learning. By role on the left, by school level in the middle, and by school type on the right.

showed a general downward trend as September approached. As seen in Figure 5, the decline was steeper for educational leaders relative to other roles and was most stable amongst educators. Parents were the least optimistic group. There were also

differences between state and independent schools, where feelings of optimism were well matched in July, but declined more steeply amongst state school respondents and in secondary school stakeholders as compared to primary school stakeholders.

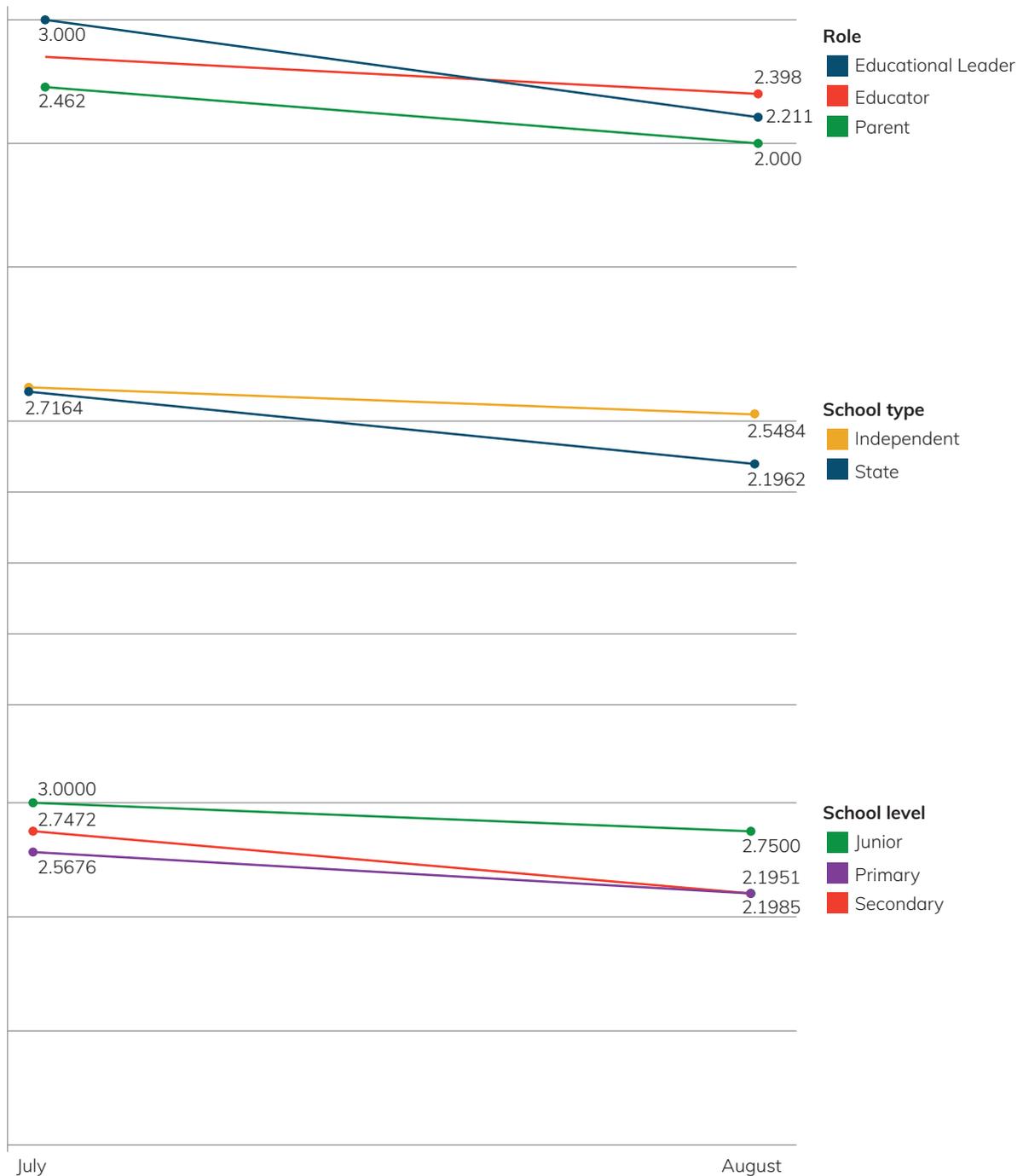


Figure 5: Average of optimism score about the school system from July to August 2020

There were also differences between the various school sectors. Junior school stakeholders were the most optimistic in July and remained more optimistic than all other stakeholder groups. Primary school stakeholders were the least optimistic of the school sector stakeholder groups.

When asked during July and August 2020 how confident they were about their ability to maintain remote learning over the longer term, our respondents' self-reported levels of

confidence (on a scale of 1 to 3, where 1 means that stakeholders are not confident about sustaining remote learning in the longer term and 3 indicates that stakeholders are confident) once again declined over time across all categories. As illustrated in Figure 6, average confidence levels mostly decreased amongst educational leaders and least amongst parents; more in state schools as compared to independent schools, and more in junior schools than primary or secondary schools.

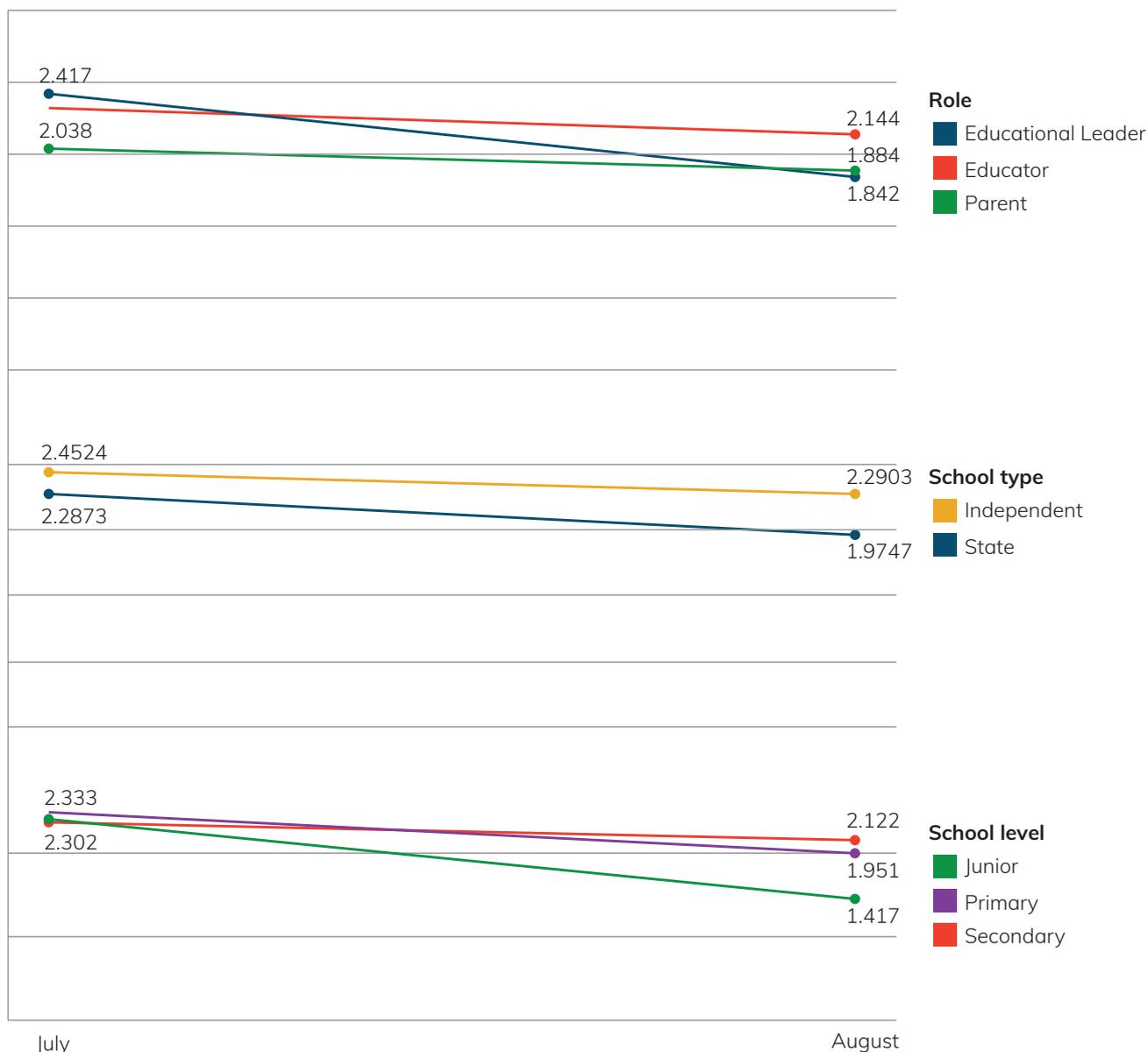


Figure 6: Average confidence score in sustaining remote learning over the longer term from July to August 2020, broken down to role (on the upper side of the figure), to school type (in the middle) and on school level (on the bottom).

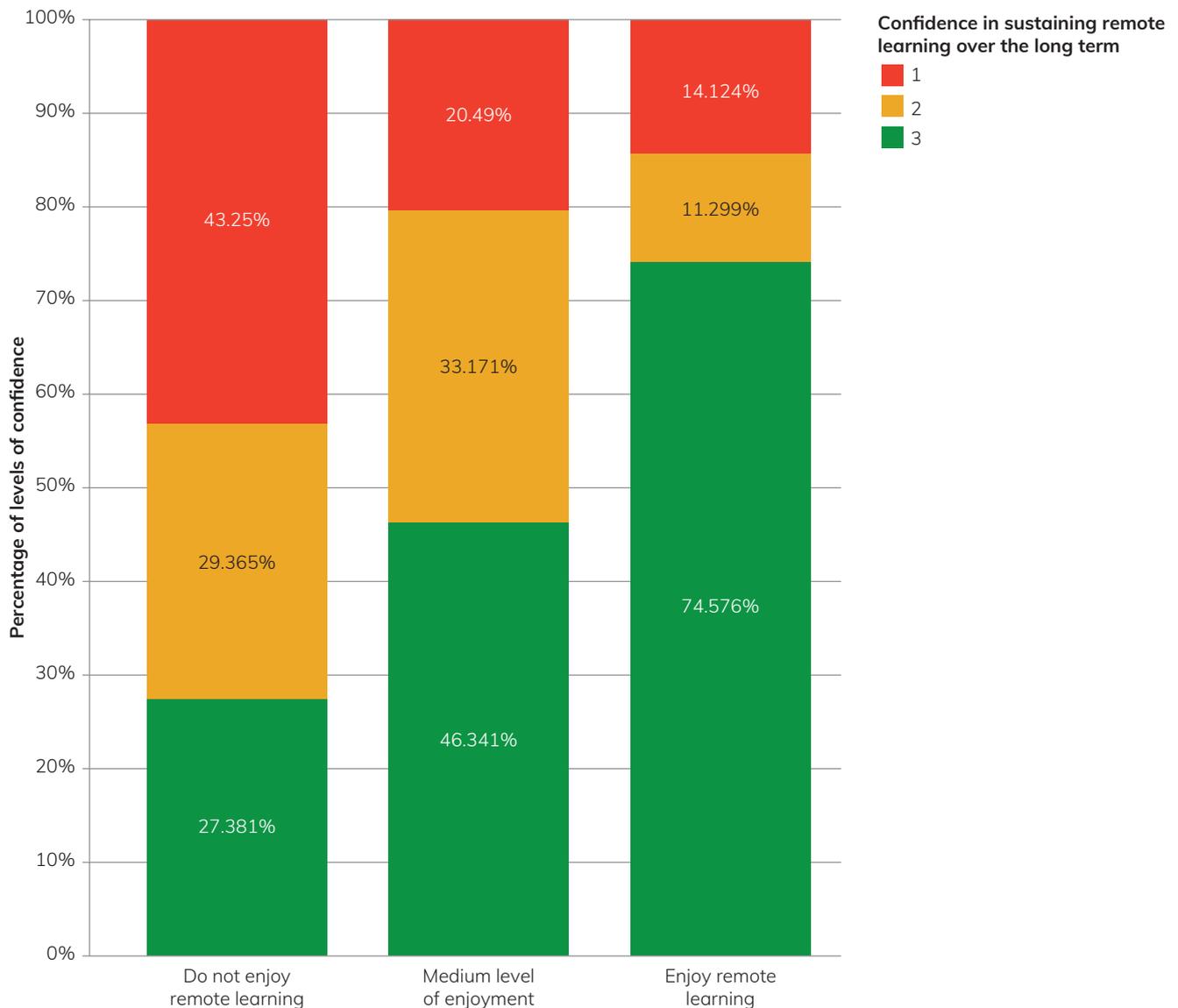


Figure 7: Breakdown of level of confidence on a scale of 1 to 3 (1 is low confidence and 3 is high confidence) (in sustainability of remote learning over time) based on level of enjoyment (of remote teaching and learning)

From Figure 7 it is evident that there is some correlation between the levels of enjoyment and confidence about remote teaching and learning. In general, those who were enjoying remote education were more confident in their ability to sustain it. Although this is clearly not a causal relationship, it is interesting to validate how central the construct of enjoyment of learning and teaching is.

In contrast between the evidenced decline in participants' optimism, enjoyment, and confidence with respect to remote learning, some learners reported feeling better and struggling less as a result of the lockdown.² Researchers from the University of Bristol (Widnall et al., 2020) found that teenagers' anxiety levels improved when

schools closed during the Covid-19 lockdown. The researchers surveyed more than a thousand year nine students from seventeen secondary schools in South-West England and found 'a variety of mental health experiences' but general 'reductions in anxiety and rises in well-being' (p.15). They said that 'this may be due to the removal of stressors within the school environment, such as the pressure of academic work and challenging peer relationships including bullying' (p.15).

There was also positive evidence about the educational offerings and their implications on some learners' ability to strive, as reported by one of our interviewed headteachers:

² <https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2020-wave-1-follow-up>

'[...] so children sent audition tapes [...] and our teacher compiled them all on YouTube [...] and our judges watched them and had finalists. One of the finalists came second in the end, as we had an online vote to select the winners. But the little chap who came second is a [...] nonverbal autistic child who goes on quite a tight timetable, because he's home-schooled in part of the time because he's got quite specific needs. But he would never have done that in a million years in school, he would never have come to an audition in my office and done this thing, but because he could do it by himself in his bedroom [...]' [Rachel Tomlinson, Headteacher, State Primary]

Opportunities

The variety of the educational offerings was not the only opportunity educational stakeholders were identifying. Indeed, the overwhelming majority of our survey respondents indicated that they saw opportunities in the mode of learning carried through schools' closure. Figure 8 shows the main opportunities that our respondents reported on as resulting from the pandemic. Figure 8 also illustrates that 53.82% of respondents believed there was an opportunity for improved use of technology for learning. Other opportunities identified included improved technical skills among teachers (34.20%) and informal learning opportunities (29.37%) and informal learning opportunities (29.37%).

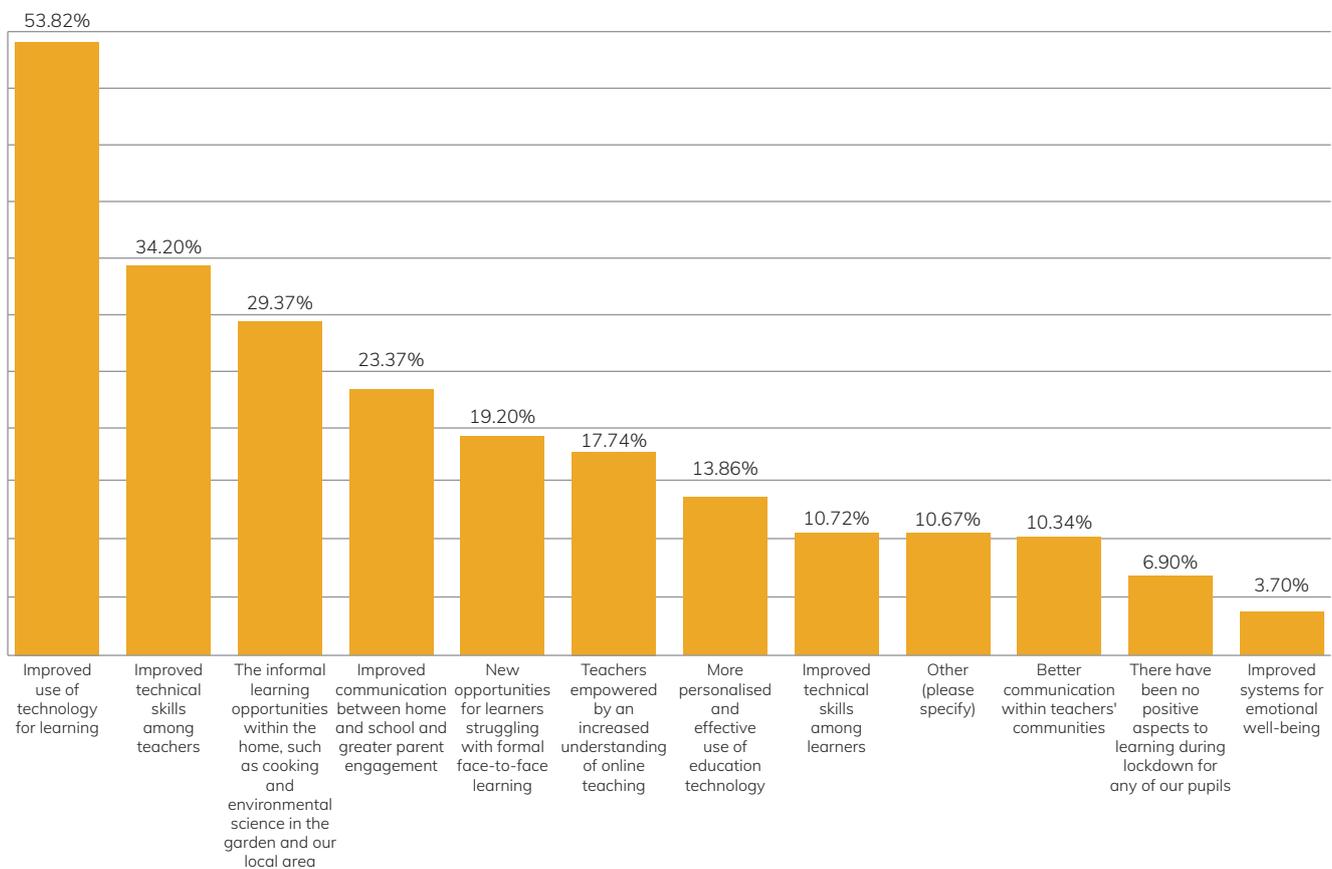


Figure 8: Opportunities as indicated by respondents (each respondent was asked to choose up to two main opportunities)

As shown in Figures 9A and 9B, state school stakeholders were more appreciative of new opportunities for learners who were struggling with face-to-face learning and opportunities for technical upskilling of both learners and

teachers. Also, primary school stakeholders were more appreciative than secondary school stakeholders about the opportunities for improved communications between parents and schools.

	Independent	State
Improved use of technology for learning	 32.59%	 31.25%
Improved technical skills among teachers	 17.78%	 19.36%
Improved communication between home and school and greater parent engagement	 11.11%	 11.03%
New opportunities for learners struggling with formal face-to-face learning	 6.67%	 9.07%
Teachers empowered by an increased understanding of online teaching	 9.63%	 9.80%
More personalised and effective use of education technology	 5.93%	 7.72%
Improved technical skills among learners	 3.70%	 6.13%
Other (please specify)	 3.70%	 2.08%
Better communication within teachers' communities	 4.44%	 2.21%
Improved systems for emotional well-being	 4.44%	 1.35%

Figure 9A: Percentage of educational stakeholders indicating opportunities by school type and level

	Primary	Secondary
Improved use of technology for learning	 24.83%	 33.42%
Improved technical skills among teachers	 16.78%	 19.68%
Improved communication between home and school and greater parent engagement	 15.44%	 10.04%
New opportunities for learners struggling with formal face-to-face learning	 9.40%	 8.85%
Teachers empowered by an increased understanding of online teaching	 8.05%	 10.30%
More personalised and effective use of education technology	 8.72%	 6.61%
Improved technical skills among learners	 7.38%	 5.15%
Other (please specify)	 2.68%	 2.25%
Better communication within teachers' communities	 3.36%	 2.11%
Improved systems for emotional well-being	 3.36%	 1.59%

Figure 9B: Percentage of educational stakeholders indicating opportunities by school type and level

Main concerns

When asked about their main concerns, the overall most concerning factor for respondents was work-life balance (37.86%), followed by concerns about students 'falling behind' (33.48%) (see more in the

section on 'Disproportionate Disruption' below), and confusing messages and guidelines from the government (28.10%) (see more in the section on 'Trust' below). Interestingly, on average, loss of income was the least of our respondents' concerns.

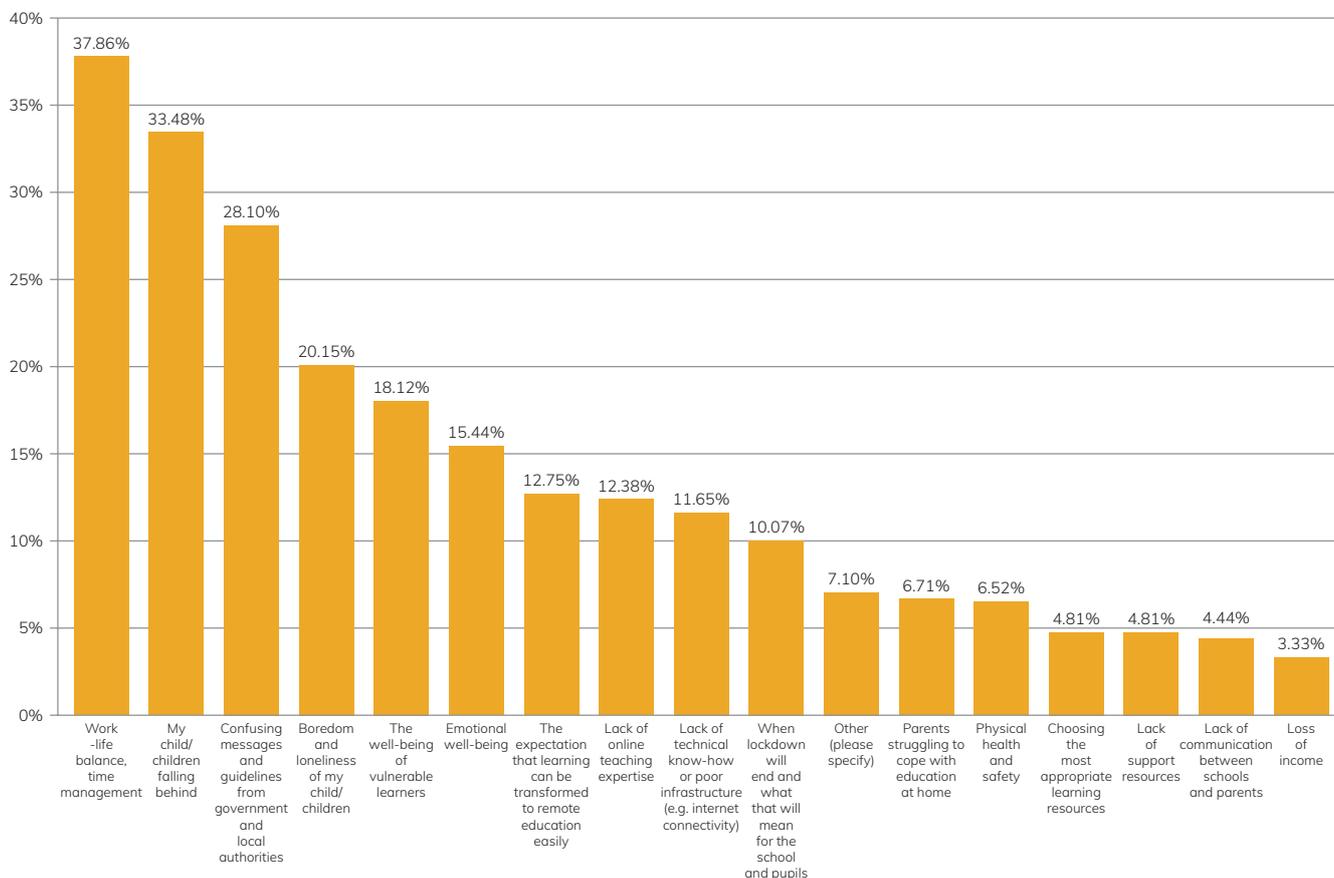


Figure 10: Concerns as indicated by all educational stakeholders

	Educational Leader	Educator	Parent
Work-life balance, time management	37.25%	40.32%	33.33%
Confusing messages and guidelines from government and local authorities	37.71%	28.68%	24.21%
My child/children falling behind	27.38%	37.61%	26.67%
Boredom and loneliness of my child/children	21.43%	21.32%	16.84%
The well-being of vulnerable learners	21.43%	26.39%	2.50%
Loss of income	20.00%		
The expectation that learning can be transformed to remote education easily	17.86%	9.72%	10.00%
Lack of technical know-how or poor infrastructure (e.g. internet connectivity)	16.07%	11.05%	12.63%
Lack of online teaching expertise	12.50%	12.37%	13.68%
Parents struggling to cope with education at home	10.71%	5.56%	2.50%
Emotional well-being	7.14%	6.94%	37.50%
Lack of support resources	7.14%	3.95%	7.37%
Physical health and safety	7.14%	5.09%	11.85%
Choosing the most appropriate learning resources	3.57%	4.74%	6.32%
When lockdown will end and what that will mean for the school and pupils	3.57%	13.89%	10.00%
Other (please specify)	2.38%	7.52%	9.63%
Lack of communication between schools and parents	1.79%	3.68%	9.47%

Figure 11: Concerns ranking by role

Looking more deeply at the concerns of specific stakeholders, Figure 11 shows that teachers were the group most concerned about work-life balance (40.32%) and about what will happen when the lockdown is over. This might reflect on the need for some teacher training on how better to manage remote learning.

Understandably, educational leaders are the group most concerned about confusing messages from the government, which suggests a need for better collaboration between policymakers and educational leaders. Parents' concerns about emotional well-being and communication between schools and parents were much deeper than the other stakeholders, which suggests that better communication and support communities are needed between school staff and parents.

Figures 12A and 12B map the concerns of respondents from different school types and levels. It is evident that the concerns about students 'falling behind', and the lack of technical know-how and poor infrastructure are stronger in state schools. The 'falling behind' concern was also greater in secondary school stakeholders than in primary schools. Boredom and loneliness amongst students were more of a concern across the state

sector, particularly in secondary schools.

In related research by Brink et al. (2020), when students were asked about their biggest challenges, they frequently mentioned lack of motivation, and the difficulty of studying alone, both of which were selected twice as often as any other factor, which suggests the need for a deeper look into collaborative learning practices.

	Independent	State
Work-life balance, time management	44.12%	47.29%
Confusing messages and guidelines from government and local authorities	35.29%	29.06%
My child/children falling behind	29.41%	42.36%
Boredom and loneliness of my child/children	17.65%	20.94%
Lack of online teaching expertise	16.18%	12.07%
Other (please specify)	14.71%	8.62%
Lack of technical know-how or poor infrastructure (e.g. internet connectivity)	10.29%	12.07%
Physical health and safety	8.82%	6.16%
Lack of support resources	5.88%	5.17%
Choosing the most appropriate learning resources	5.88%	5.17%
Lack of communication between schools and parents	4.41%	3.69%

Figure 12A: Concerns ranking by school type

	Primary	Secondary
Work-life balance, time management	43.59%	47.47%
Confusing messages and guidelines from government and local authorities	32.05%	29.55%
My child/children falling behind	25.64%	43.43%
Boredom and loneliness of my child/children	14.10%	21.72%
Lack of technical know-how or poor infrastructure (e.g. internet connectivity)	17.95%	10.61%
Lack of online teaching expertise	11.54%	12.88%
Lack of support resources	11.54%	4.04%
Physical health and safety	10.26%	5.81%
Choosing the most appropriate learning resources	6.41%	5.05%
Other (please specify)	8.97%	9.60%
Lack of communication between schools and parents	8.97%	2.78%

Figure 12B: Concerns ranking by school's level

To better understand what the general public (beyond just educational stakeholders) are concerned about in the context of this report, we went to Twitter to harvest the words used before and after the start of the school year in September when schools reopened. The education and EdTech related tags we have chosen to guide us appear in Figure 58. Figure 13 and 14 are focused on the 40 most frequent terms collected from Tweets before the school year began, on 18 August 2020 (left), and after the school year began, on 2 October 2020 (right). It shows how the focus has changed from 'learn', 'time', 'need', 'share', and 'student' to 'free', 'support', 'school', 'teacher', and 'new'.

Twitter data, whilst lacking the design and structure of survey data, has the advantage of picking up sentiment and narrative in an unguided way. If one can draw any conclusions from this data, it suggests that there is a need for support from new (and free) online tools. The prevalence of tweets that mention parents and students reduces and mentions of teachers and the school increase over time, which suggests that the discussion became more focused on school learning, and on the need for support.

In the next chapter, we try to point at some of the most concerning themes arising from our study.

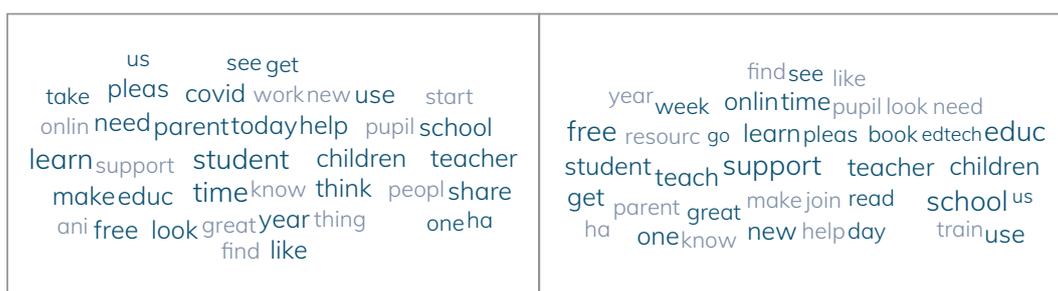


Figure 13: Most frequently appeared stems on tweets collected before the school year (left) and after school year opening (right)

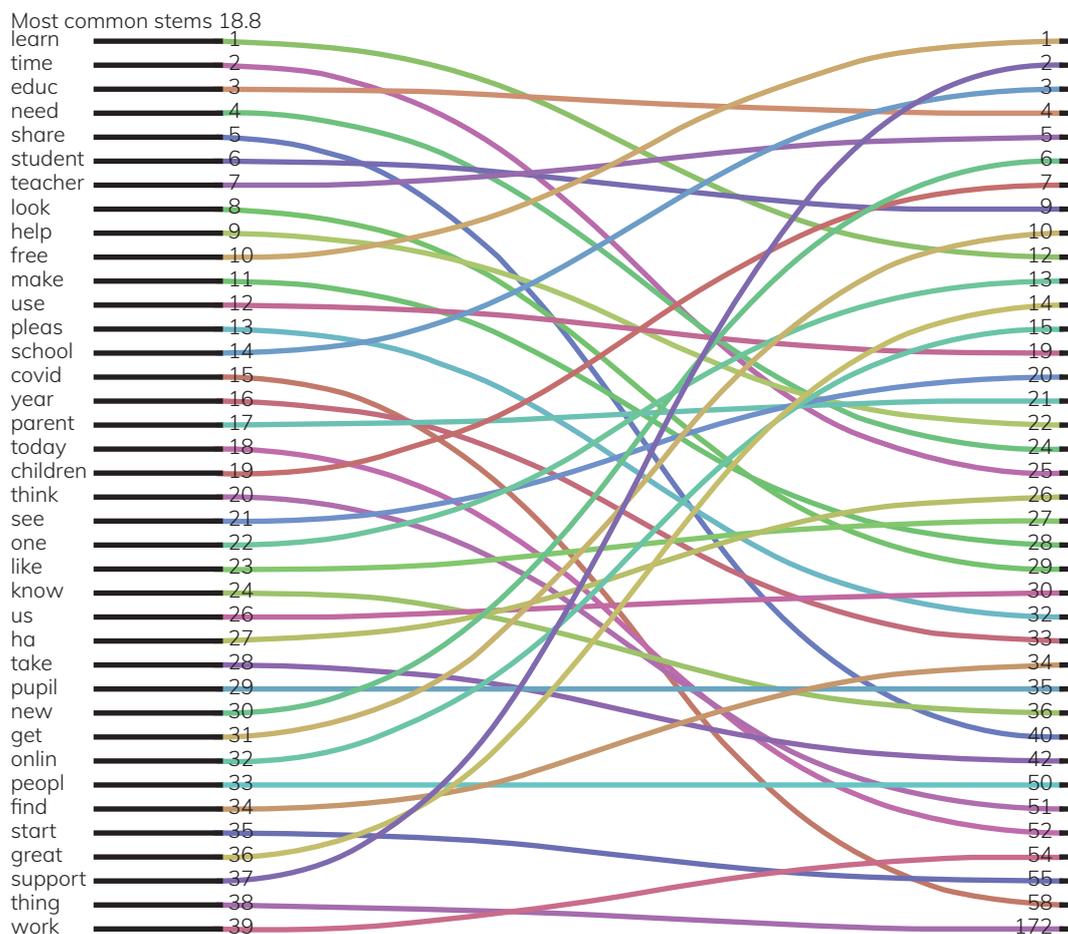


Figure 14: Difference in frequency occurrences ranking of the most common stems on 18 August (left) in relation to their appearance on 2 October (right)

Chapter 3: Six main themes

Theme 1: Remote Emergency Teaching (RET)

A report compiled by Cambridge University Press (2020) reveals that schools across the world were generally not prepared to implement distance learning at scale when schools were closed during periods of the lockdown. Many adopted interim measures 'with limited evidence that [these] would reach every learner or would provide an effective way to ensure continuity of learning' (Cambridge University Press, 2020). Indeed, one of the main outcomes of English schools needing to revert abruptly to remote teaching without an appropriate pedagogical and physical infrastructure in place, is that most schools unsurprisingly adopted Remote Emergency Teaching (RET) practices. These practices included transferring classroom practices online without the pedagogical scaffoldings in place (such as well-constructed feedback, interaction and class engagement), or merely expecting students to be able to continue with their studies, for example – while interacting just with paper-based assignments that have been uploaded to a Learning Management System (LMS). The field of online learning is not new (Joksimović et al., 2015). Online courses and degrees began to appear around 1994, and online learning enrolment, even before Covid-19, was growing much faster globally than enrolment to face-to-face settings. However, this was far from being the case in the English schooling system, pre-Covid. Even though the field of effective online learning is very well researched and practised in many places (such as the English Open University), the siloed structure of the English educational system has prevented it from diffusing into most schools. This has brought us in September 2020, after a rapid 'experimental period' of six months of remote learning, to a place where most schools still use RET.

The interview data we collected describes the way schools started with providing downloadable packs of resources, links to resources on the school website or learning platform and increased the use of already available apps and online resources. As lockdown extended, they moved to pre-recorded lessons by teachers and some live (synchronous) lessons. Out of 46 interview participants from schools, only one state school (out of 37) and two independent school participants (out of nine) mentioned a seamless transition to remote teaching. All the independent schools' participants said that their schools provided live lessons (in one case 8.40am to 4pm every day), while most state school participants said that their schools did not use live lessons due to lack of access to technology and internet connection by some students, lack of resources in the school, concerns over online safety and privacy, lack of school infrastructure and having teachers needing to teach in the school and remotely at the same time (emergency workers and children on free school meals were invited to attend school in England throughout the lockdown in spring 2020). Some schools used live sessions for well-being meetings to check if students and families were all coping, and almost all schools used live remote meetings for staff meetings (mainly Microsoft Teams and sometimes Zoom).

Online and face-to-face learning are very different and are based on a different set of assumptions. For example, online learning requires a much higher degree of self-regulated learning skills, which many students (in particular younger pupils) are not equipped with, often leading to lower retention rates. However, studies do show that online learning can be delivered to a high quality (e.g., Bernard et al., 2004; Duffy et al., 2002; Fojtik, 2015).

Most interview participants commented that the approach they adopted to teaching during the spring lockdown needs to be reviewed, and teaching needs to be made interactive and more efficient in the event of future lockdowns that require remote teaching. In addition, most participants agreed that the use of technology during lockdown increased teachers' skills and confidence, and now most teachers can use technology. Teachers reported being more aware of what technology could do for their students.

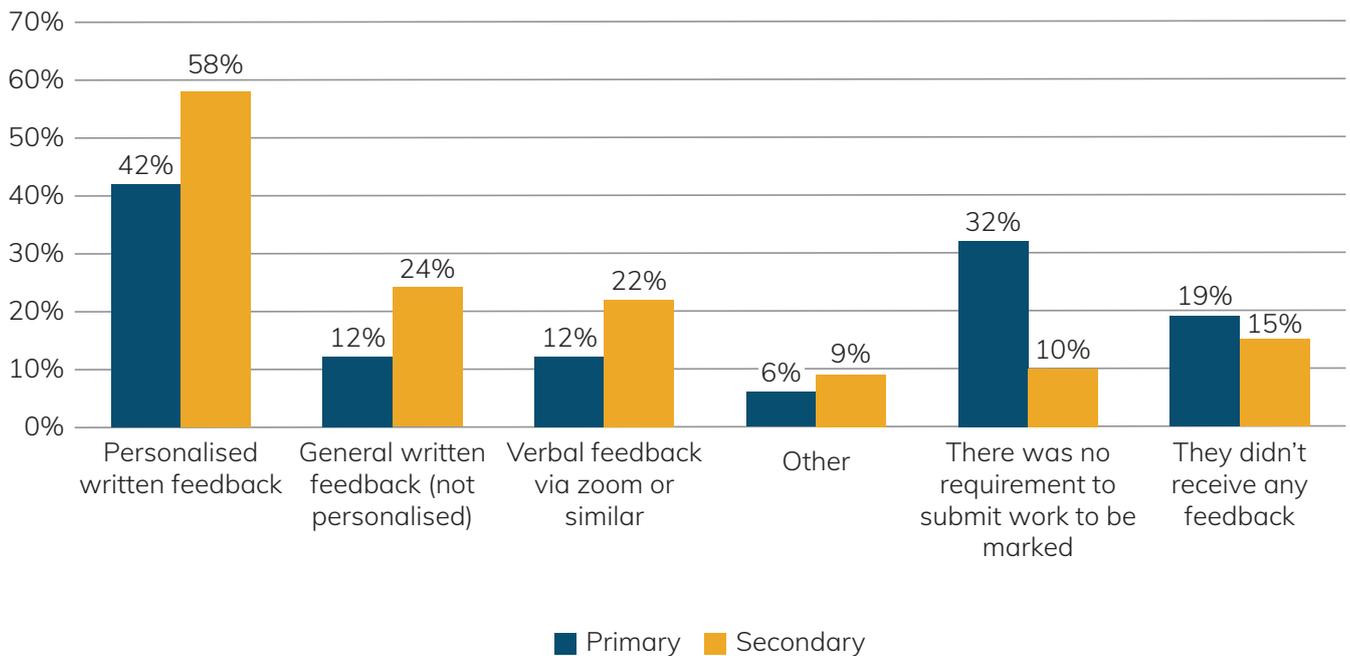


Figure 15: Primary vs secondary students' parents on the feedback their children receive on their schoolwork during the period of schools being shut (Source: Parent Ping 28.7.2020, n=771)

Some of the key requirements for effective teaching and learning were absent in much of the teaching elements, as reported by our survey respondents. For example, Figure 15 shows that approximately 60% of primary school students and more than 40% of secondary school students did not receive personalised feedback from their teachers during the lockdown.

The implications of RET for the long term are even more worrying. Many educational stakeholders are still drawing conclusions about the potential effectiveness of online learning from their experience of RET. Unsubstantiated opinions can be shared and seen by thousands through social media platforms: a thread likening the university experience during the pandemic to online lectures in a plague village has been seen and liked by over 35,000 Twitter users (search: 9k plague village).

A Teacher Tapp survey conducted on 20 July 2020 asked respondents '[g]iven a free choice, and assuming all options are equally safe, which would you prefer next half-term?' The options available were: teach from home; teach in school (with social distancing); teach partly in school and partly from home. The teachers who responded indicated a clear preference for teaching in school, with 69% of respondents selecting this option. The hybrid approach of teaching partly in school and partly from home was preferred to purely distance teaching, as illustrated in Figure 16.

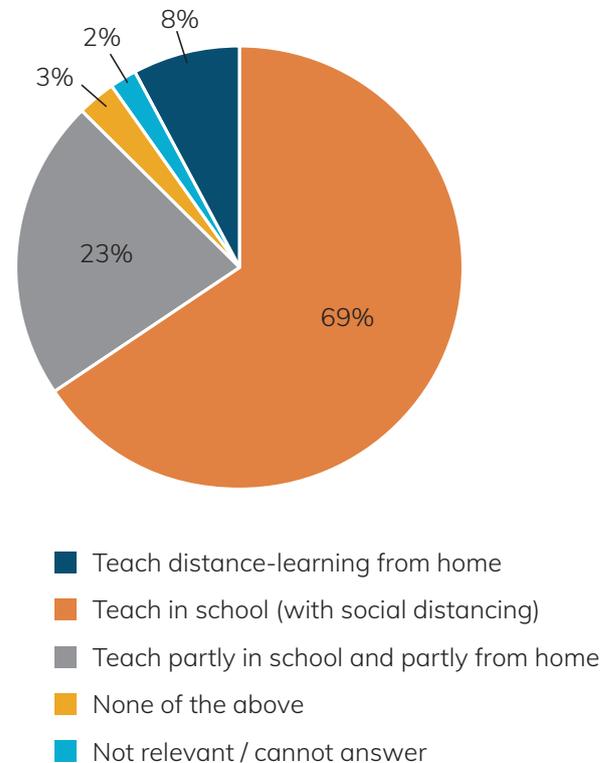


Figure 16: Given a free choice, and assuming all options are equally safe, which would teachers prefer next half-term (Source: Teacher Tapp 20.7.2020, n=7,187)

RET and further Covid-19 restrictions also had repercussions on assessment, with GCSEs and A-level exams being cancelled for summer 2020. When exams were cancelled due to the pandemic, there was a great deal of confusion and concern about the algorithm and methodology used to grade as an alternative.³ This debate continues with decisions still to be made about 2021 examinations at the time of writing this report, as well as the longer-term impact of the problems seen this summer. As a result, public trust in the government, as indicated in the YouGov data represented in Figure 17, has declined.

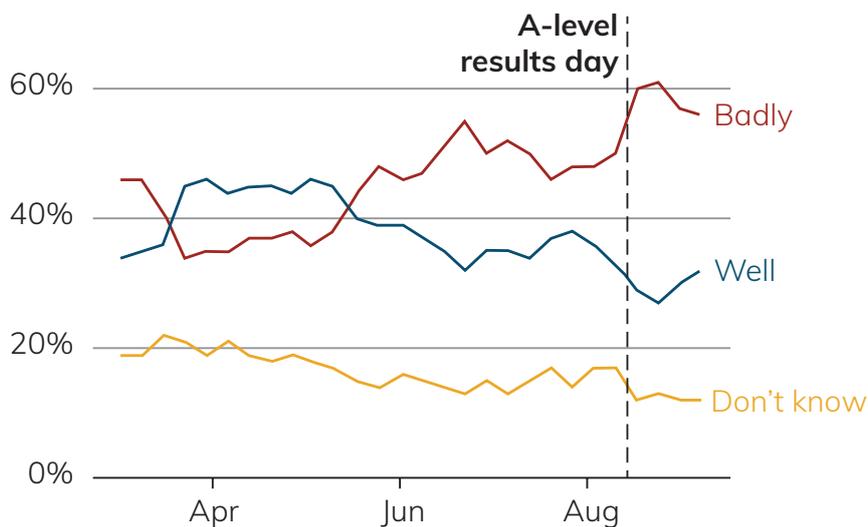
These concerns about the school assessment regime are giving rise to a new wave of resistance, such as the campaigning groups *Rethinking Assessment*⁴ and *School Differently*⁵. In addition, the current assessment regime, which is geared towards high stakes testing, does not take advantage of the possibilities offered by effective online learning, which is interactive, socially and cognitively engaging, and capable of tracking a much broader set of skills over time (Luckin, 2017).

Theme 2: Teacher skill development

One of the main factors leading to the gap between RET and best-practised online learning is related to teachers' proficiency in online learning pedagogies.

Although many online resources were shared to support the delivery of learning by reputable organisations like UNESCO, OECD, Harvard Graduate School of Education, the World Bank, the Hundred Organisation, BBC, and private EdTech companies, studies show that there are still teachers without the necessary technical and pedagogical skills to integrate digital devices in instruction (OECD, 2020). The possession of many resources, adequate devices, a reliable internet connection, and existing exposure to technologies is not a sufficient enabler on its own to lead to effective student learning. Teachers need to develop online teaching skills and to be able to critically evaluate the evidence about the available EdTech tools and the applicability and appropriateness of different pedagogical methods (OECD, 2020). It is also worth mentioning that the use of technology in education is not limited to teaching and learning materials. A review of Education in Emergencies research literature found that some of 'the most powerful uses of digital technology centre around education management, coordination and communication' (Cambridge University Press, 2020).

In practice, and despite the difficulties teachers were faced with when suddenly required to use technology to teach remotely, they were able to adapt remarkably quickly, and build capacity (Schleicher and Reimers, 2020, p.9–10). Our interview data describes how many institutions and communities shared free resources to



Source: YouGov

BBC

Figure 17: How is the government handling the issue of education in the UK? (Source: YouGov, BBC: <https://www.bbc.co.uk/news/education-54103612>)

³ <https://www.theguardian.com/education/2020/aug/17/uk-exams-debacle-how-did-results-end-up-chaos>

⁴ <https://rethinkingassessment.com/>

⁵ <https://www.schoolsdifferently.net>

assist with home learning, and a list of these resources was made available to teachers and parents to use as they saw fit. One of our teacher interviewees reported that:

'[...] as soon as someone learned how to do something, we would then share it with everybody else. So, I mean we had some very basic training and then, and then we shared. So it was just learning together, helping each other.' [Teacher, State Primary]

Teachers were also able to find many resources for professional learning in the form of webinars, Zoom courses and live-streamed educational events. FutureLearn⁶ designed and offered a practical course to explore online teaching in response to the Covid-19 pandemic and more than 87,000 learners enrolled on the course. Richard Holme, writing in TES on 30 April 2020, presents some of these resources available to teachers and argues that 'there is a surprising amount of professional learning taking place, although in a more informal or unconscious manner. Teachers are reaching out to provide support to colleagues across Scotland and around the world, in ways that we have never seen before.'⁷

In the Edurio survey (Brink et al., 2020), when asked about their training needs, two-thirds of participating teachers felt they did not have all the training they needed. Among those, using technology, organising pupil collaboration digitally, delivering remote lessons, and digital assessment and feedback were the most frequently selected options, as seen in Figure 18.

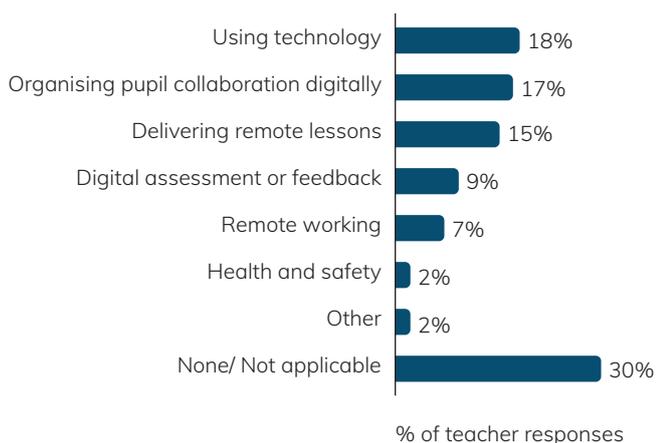


Figure 18: Teachers' training needs (Brink et al., 2020) – 'What additional training would you find valuable, to support your work?'

⁶ <https://www.futurelearn.com/>

⁷ <https://www.tes.com/news/evidence-clear-teachers-are-doing-all-they-can>

Theme 3: Parental engagement

A survey conducted by Parent Ping on 30 July 2020 showed⁸ that parents of older children

in secondary schools and those who were transitioning from primary to secondary schools were most worried about the return to school in September 2020.

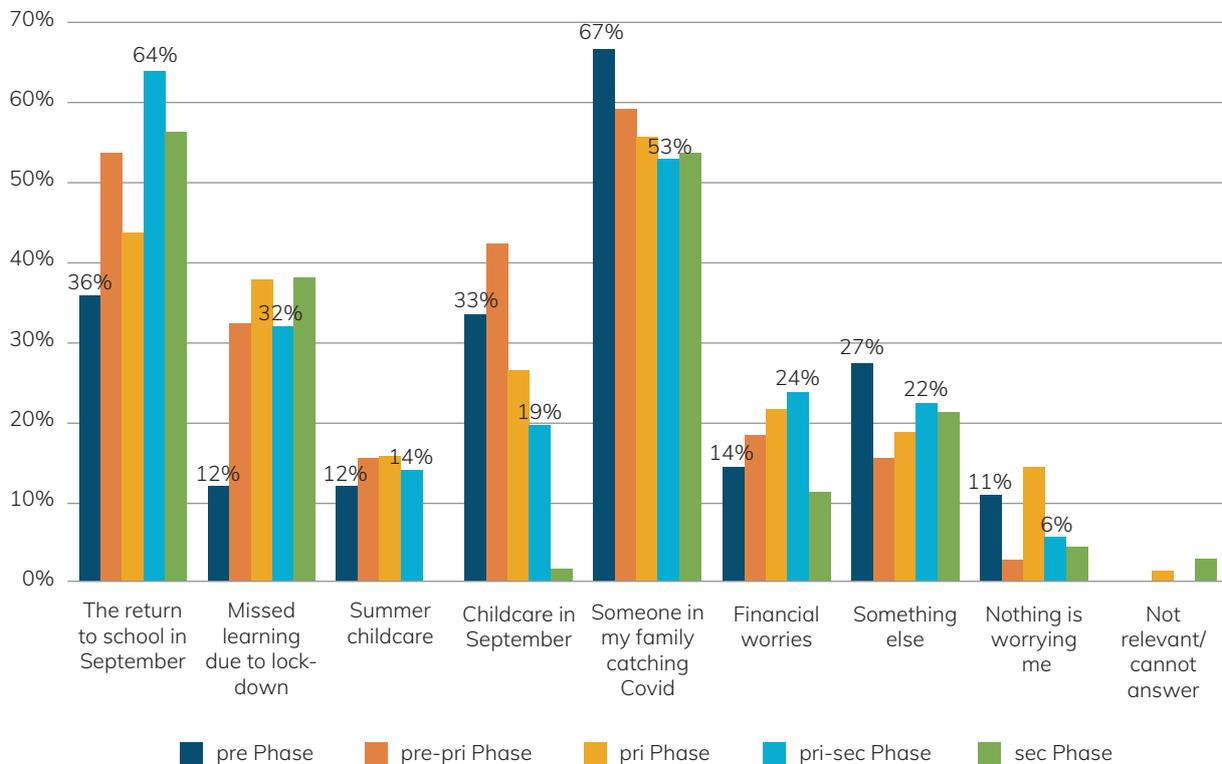


Figure 19: What do parents worry about? (Source: Parent Ping, n=444)

In our interviews, some parents noted that the conflicting need to support their children and to attend to their own professional responsibilities created fears that they were neither working nor parenting effectively. One parent told us:

'So, if I'm doing a piece of drafting, and I get interrupted, it then takes me a minute and a half to get back into that drafting. So, everything took longer [...] I thought I was doing a bad job at my job and a bad job of being a mother [...]' [Kirstin Roberts, Parent]

It is not surprising that parents have been worried over the months of disruption due to Covid-19. However, the disruption also provided some great opportunities for increased parental engagement in their children's education. Parentkind⁹, a charity that helps parents to get fully involved in their children's education and school life, conducted three surveys in March, May, and July 2020. In these surveys, they asked parents to share their opinions and concerns related to the pandemic,

what they were going through and how they were dealing with school closures. The data from these surveys indicates that 88% of parents felt engaged in their child's learning and more than half (53%) felt they engaged during and after the lockdown, in comparison to 10% reporting this engagement prior to the lockdown.

On the topic of communication between home and school, data from Brink et al., (2020) illustrates that parents who felt that communication from school leadership was clear were ten times more likely to feel confident about their school's handling of the disruption than those parents who did not feel communication from school leadership was clear.

For most parents we interviewed the communication was adequate:

'Right at the start before lockdown actually began – when it was on the horizon – we were all given some expectations about what would happen.' [Fiona Aubrey-Smith, Parent]

⁸ <https://parentping.co.uk/>

⁹ <https://www.parentkind.org.uk/>

However, this was not the case for other parents, who felt completely on their own with the lack of communication from the school. 9.47% of the parents in our surveys mentioned that the communication with school was a concern (see Figure 11).

As already noted in the 'Main concerns' section above, the concern of *falling behind* is a very pronounced one. In a separate survey by Parent Ping, more than half (56%) of the parents who responded also indicated that *falling behind* was quite a big concern (see Figure 20).

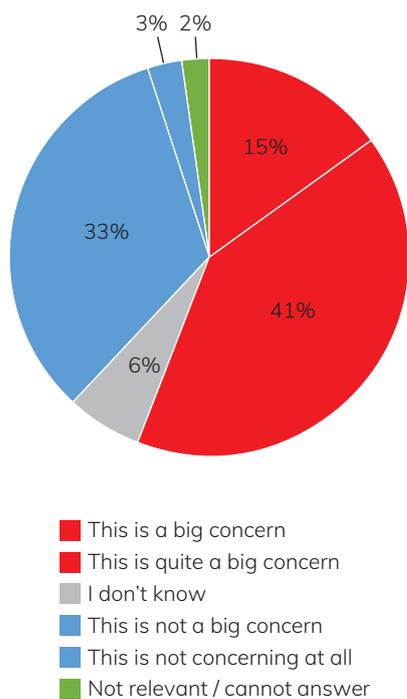


Figure 20: *Is falling behind a concern?* (Source: Parent Ping 28.7.2020, n=430)

In our interviews with parents, one-third of the respondents noted that they were concerned about their child falling behind. Three respondents indicated that their concerns were founded on their belief that home learning was not effective, or that the subjects that interest their child cannot be taught remotely. For example, one parent we interviewed shared how her child's learning was affected during the lockdown:

'[...] He was doing a very long commute to attend a basketball Academy where he is doing a sports diploma and business A Level. Lockdown had a real impact on what he was able to do because of course, he was unable to do any physical sports. He was

trying to do what he could using a laptop from home.' [Michelle Jayman, Parent]

The *falling behind* and 'learning loss' narrative is tackled by other researchers and is likely connected to some of the other themes we report here, such as assessment, anxiety, confidence, and RET. For example, Brink et al. (2020) reported that students were almost six times more likely to report low levels of stress if they did not feel overworked.

Theme 4: Disproportionate disruption

Concerns about learning loss and students *falling behind* was not felt evenly across all research participants, as is highlighted by various reports, such as Maldonado and De Witte (2020), and the EEF report (EEF, 2020). It is not surprising that the transition from face-to-face to online/home-schooling was likely to generate educational disruption and impact negatively on learning. It is well known and once again confirmed in the most recently published OECD data (OECD, 2018) that students from disadvantaged communities have less access to personal technology and high-quality online learning resources.

SchoolDash¹⁰ and RSAssessment¹¹ have shown in their joint report that younger year groups generally show bigger reductions in attainment than older year groups, and that schools with higher levels of deprivation show greater decline.¹² Pensiero et al. (2020) analysed the data from the Understanding Society study¹³ and found that primary school children from the least advantaged group would lose 31% of a standard deviation on average across subjects by the time schools reopened in September 2020. However, children from the most advantaged group would have lost 24% of a standard deviation. The difference between these two groups is bigger in secondary education than primary: 28% of secondary students from disadvantaged backgrounds compared to 14% of primary-aged children from most advantaged backgrounds (Pensiero et al., 2020).

In one of the more recent multi-stakeholder studies, Brink et al., (2020) found that around eight in ten teachers mentioned that the attainment gap between pupils was increasing. In schools with a higher proportion of free school meals, most teachers felt that the majority of their pupils would

¹⁰ <https://www.schooldash.com/>

¹¹ <https://www.risingstars-uk.com/rs-assessment>

¹² <https://www.risingstars-uk.com/rs-assessment/whitepapers>

¹³ April wave: see <https://www.understandingsociety.ac.uk/topic/Covid-19>

require additional support. Green (2020) analysed data from a survey designed by researchers at the Institute for Fiscal studies and the UCL Institute of Education. Their findings show that the extent of online provision in state schools was minimal: '71% of state school children received no or less than one daily online lessons' (Green, 2020 Executive Summary, p.2). In independent schools, however, the image was different, and it made an impact. An assistant Headteacher we interviewed told us:

'[...] we found an awful lot of parents felt that children would learn better from face-to-face teaching (synchronous). Having spoken in the area we're in, we've got a number of private schools close by and I think people are aware that private schools are using things like Zoom and Teams.'
[Louis Chaplin, Assistant Headteacher, State Secondary]

The amount of support provided to families for the home-schooling of children varies from school to school, although it is known that independent schools have provided more online and offline lessons: 31% of independent schools provided four or more live (synchronous) online lessons daily, compared with just 6% in state schools (Green, 2020). The Covid-19 impact brief by The Sutton Trust reflected that, in the first month of the lockdown, students in independent schools were twice as likely to access online lessons daily compared to those in state schools (Cullinane & Montacute, 2020).

Pensiero et al. (2020) conclude that:

'The transition to distance schooling is likely to exacerbate inequalities by socio-economic groups due to both the socio-economic gap in the volume of schoolwork completed and to the relative ability or inability of some parents to support children's learning. Families with a service class background have the twofold advantage of being better able to assist their children with home-schooling and of having more time to do it as they are more likely to be working from home [...] Finally, our analysis does not take into account the impact on educational attainment of the mental well-being of children and/or their parents during the lockdown, which is also likely to be associated with socio-economic status and further exacerbate socio-economic inequalities in learning losses.'

This disparity in provision was revealed in the interviews we conducted with teachers and school leaders. Most state schools did not offer live lessons due to lack of teacher preparation, lack of resources, concerns over students' access, and online privacy and safeguarding. Independent schools, on the other hand, had personnel to deal with online privacy and security issues, IT personnel to support teachers, and digital learning experts to advise best ways to implement online learning.

Another factor was the type of learning environment families are able to provide at home. Effective home learning is made much easier by access to suitable technology to attend online classes or download assignments and a quiet, dedicated space to study. Not all children had access to a quiet space for learning (Andrew et al., 2020). The Nuffield Foundation and National Foundation for Educational Research (NFER) are also undertaking research on the impact of Covid-19 on mainstream schools in England (See Lucas et al., 2020 and Sharp et al., 2020). Their first survey focused on the impact of the closure and early plans for re-opening, and many of the findings echoed those of other studies: access to IT was identified as the most significant form of educational disadvantage, with 81% of teachers saying it was leading to disadvantaged students being less engaged in schoolwork, a bigger factor than, for example, students being eligible for Pupil Premium funding, which was identified by 52% of teachers as the biggest cause of disengagement. However, the overall level of deprivation of the school was found to have more influence on student engagement than the level of deprivation of individual students, with students from disadvantaged backgrounds in more affluent schools being more likely to be more engaged in their learning.

In Scotland, a survey carried out by MRC Pathways,¹⁴ a mentoring charity for disadvantaged children, found that almost 70% of the most disadvantaged students in Scotland have not used any learning materials provided by their school since the start of lockdown in spring 2020. The survey received responses from a thousand young people and around half reported that they found the materials hard to understand, and a similar proportion of respondents were too stressed and anxious to engage with the work. In addition, around one in four reported having caring duties, which affected their ability to learn at home. Nearly 15% of the survey respondents did not have the adequate IT and internet access, and around 20% did not have the space to work at home.

¹⁴ <https://mrcpathways.org/wp-content/uploads/2020/07/MCR-Lockdown-Survey-Report-29th-July.pdf>

Even before the lockdown, research found that teachers in independent schools reported being more confident in using education technology.¹⁵ A survey conducted by Teacher Tapp on 27 June 2020 asked the question: Do teachers in state vs independent schools feel confident in using

educational technology as a learning resource? The data illustrated in Figure 21 shows that the vast majority of teachers from across both the state and the independent sector agreed, with only 10% of state school respondents and 5% of independent school respondents, 3% disagreeing.

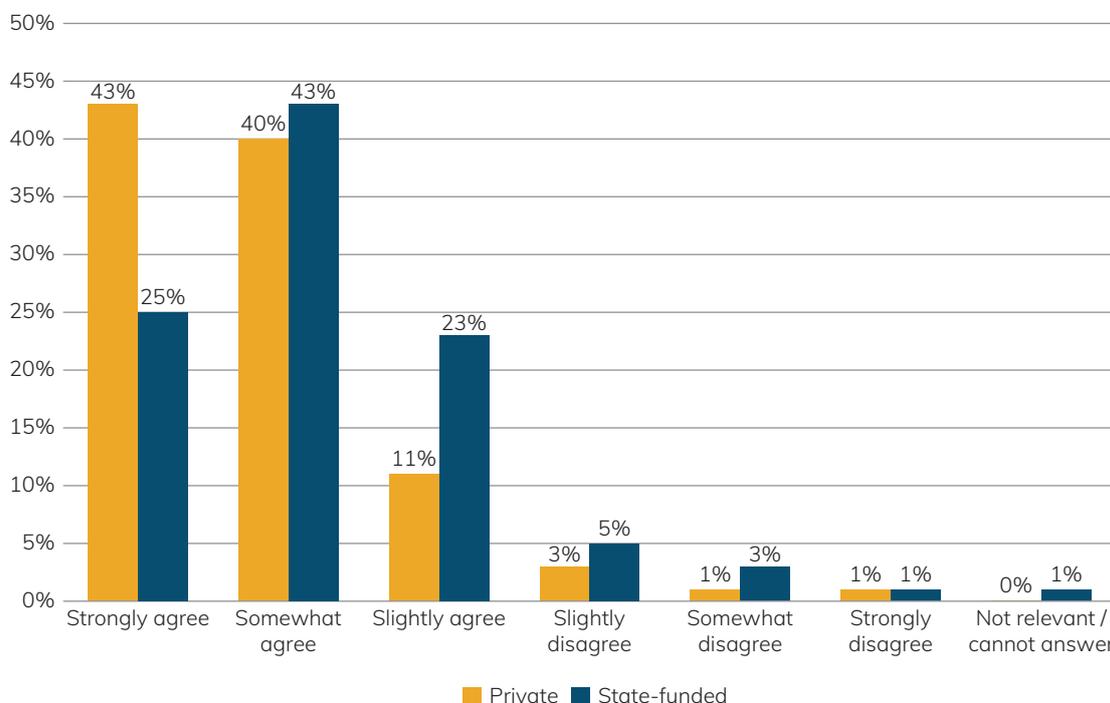


Figure 21: Do teachers in state vs private schools feel confident in using educational technology as a learning resource? (Source: Teacher Tapp n=7,303)

In addition, secondary school children, both in the least well-off families (14%) and highest-income families (10%) either have no device or have to use a phone to access schoolwork. If we consider that 88% of secondary school children report that their school has at least one online home learning resource, those children without appropriate access may be left behind (Andrew et al., 2020). The same study also explored non-educational activities of children, i.e. leisure time on screen and found that, older children in particular, spend quite a bit of time using technology for fun: 'At the top end, 9% of younger children and 23% of older children engaged in screen time for fun during eight or more hours of the day.' These findings make it clear that children's home learning experiences are very different from each other. 'Children in better-off families attend schools that are giving them significantly more work to do, often through more interactive platforms such as online video-conferencing. These students are more likely to

have access to resources such as study space and technology at home, and their parents report feeling (somewhat) more confident in supporting their learning.' (Andrew 2020, p.17).

The disparity in educational provisions is also reflected in parental concerns. For example, data collected by Parent Ping and Teacher Tapp, shows how socioeconomic factors impact the kinds of worries felt by different families. Worries about *falling behind* were evaluated by Parent Ping on 28 July 2020. As reported in Figure 19, 55% of parents who responded to being asked if *falling behind* was a concern for them stated that *falling behind* was a big or quite a big concern. When a comparison was made between respondents who were eligible for Free School Meals (FSM) and those who were not, 58% of parents eligible for FSM said that *falling behind* was either a big concern or quite a big concern for them. Seventeen per cent of parents eligible for FSM responded

¹⁵ <https://teachertapp.co.uk/what-does-distance-learning-look-like-in-england-and-where-will-teachers-kids-be-today/>

that they did not know if *falling behind* was a concern, compared to 5% of respondents not eligible for FSM. Thirty-six per cent of parents not

eligible for FSM responded that *falling behind* was **not** a big concern for them, compared to 21% of respondents who were eligible for FSM (Figure 23).

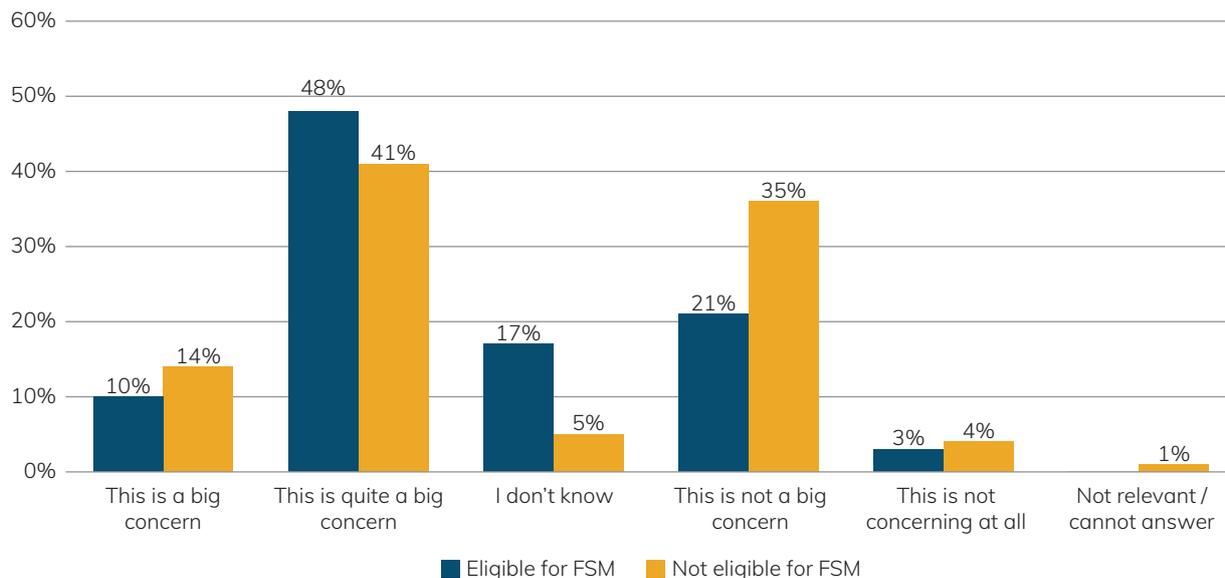


Figure 22: Is falling behind a concern for parents eligible for FSM vs parents not eligible for FSM? (Source: Parent Ping 28.7.2020, n=430)

When the same data from Parent Ping's survey on 28 July 2020 is analysed to explore the views of single parents compared to non-single parents, the differences are even more noticeable. Seventy-seven per cent of single parents stated that *falling behind* was either a big or quite a big concern for

them, as compared to 54% of non-single parents. Respondents who stated that *falling behind* was **not** a concern were divided as follows: 18% of single parents elected for this response, compared to 36% of non-single parents (see Figure 23).

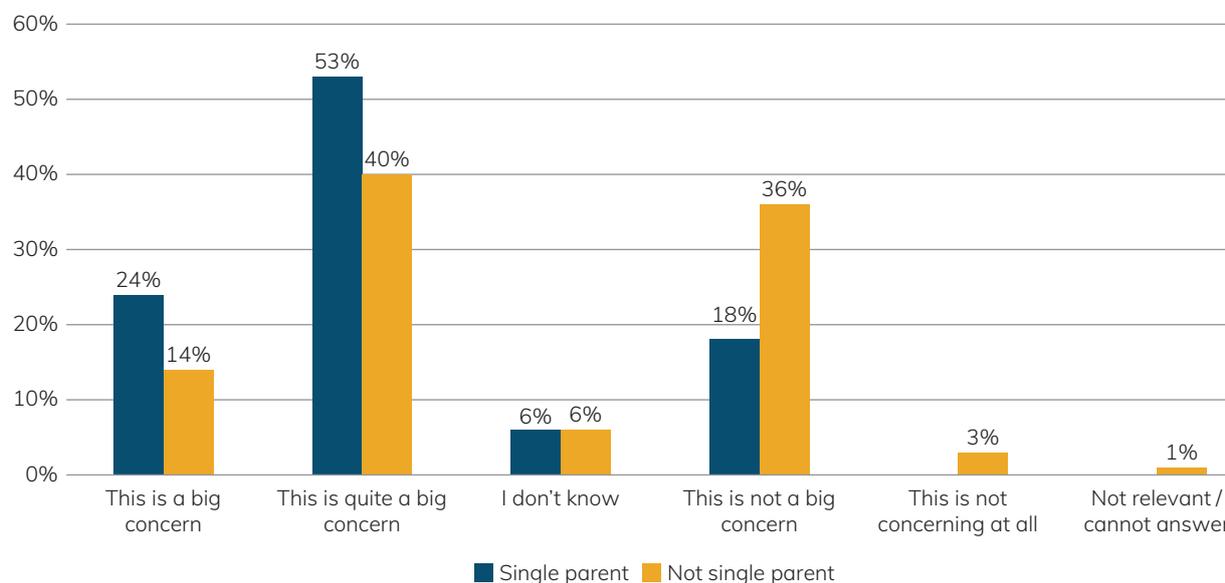


Figure 23: Is falling behind a concern for single parents vs non-single parents? (Source: Parent Ping 28.7.2020, n=430)

A further question from Parent Ping used in a survey on 30 July 2020 sought to find out what particular concerns single parents had compared to non-single parents (respondents were able to

tick any that applied). This survey revealed some clear differences. Fifty-nine per cent of single parent respondents reported being concerned about 'missed learning due to lockdown' whereas

only 28% of non-single parents selected this response. The greatest difference was seen in concerns about financial worries, with 59% of

single parent respondents selecting this response compared to 16% of non-single parents (see Figure 24).

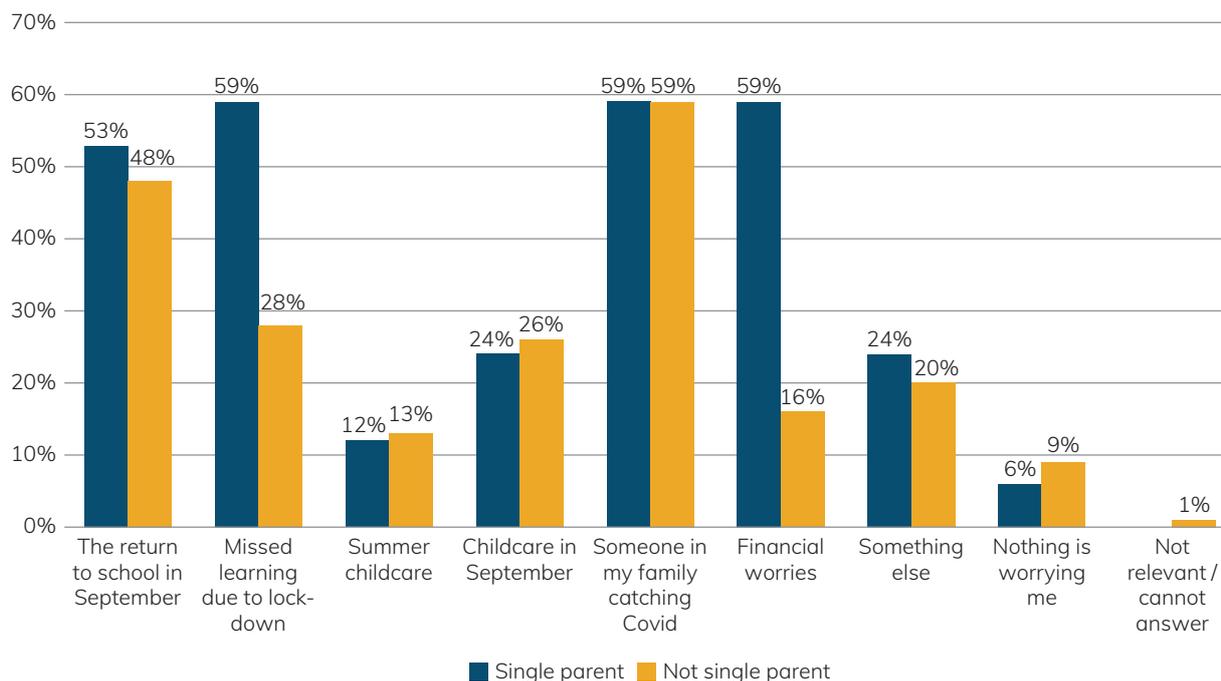


Figure 24: What do single parents worry about vs non-single parents? (Source: Parent Ping 30.7.2020 N=444)

The effect of lockdown was felt differently in different parts of the country. School leaders and teachers in educationally isolated schools in remote and coastal areas experienced additional infrastructural issues (such as access to resources), and researchers agree that these issues need to be recognised and resolved in order for children in these schools to perform in a similar way to children in more affluent and urban areas (Ovenden-Hope, 2020).

SEND

A website called Special Needs Jungle, that provides easy to understand resources, articles, and information for parents and carers of children with special needs, put out a survey to its readers to ask them about the support they and their children had received during the lockdown.¹⁶ The information gathered from parents and carers, in this survey as well as in other studies,¹⁷ revealed that support had all but disappeared. Parents of children with special needs found home learning really challenging (68%). Family circumstances such as access to internet-enabled devices, lack of access to one-to-one teaching assistants, special equipment, activities, and support workers have made their experiences even more difficult.

Moreover, many children with Education and Health Care Plans (EHCPs) were classed as 'extremely vulnerable' and needed to be shielded. The implementation, process, and application of risk assessments for children with EHCPs were all areas that raised significant concerns. A majority of respondents reported that their child had not had a risk assessment (or they did not know) and, of the parents whose children had undergone a risk assessment, only 9% said that they had been fully involved. Only 28% of parents surveyed agreed that their child's educational placement had provided very good support. Many parents said that there had been no differentiation of schoolwork for their child's needs, which meant their child could not complete the work that was set.

The type of the attended educational setting played a significant role in how positive families found remote learning and the support they received. Independent or non-maintained special schools (INMSS) had more satisfied parents (29%) compared to parents in mainstream schools (16%) and in state special schools (18%). In addition, the amount of work set was felt adequate by 50% of parents in INMSS compared to 16% in mainstream schools and 26% in state-run special schools. This significant overall disparity between the lockdown

¹⁶ <https://www.specialneedsjungle.com/coronavirus-send-education-survey/#DLreport>

¹⁷ <https://www.tes.com/news/warning-over-1-4-special-school-pupils-sat-home>

provision in independent schools and state schools certainly requires further exploration.

Special needs children’s access to therapies, one-to-one teaching assistants, and support is also badly affected by restrictions brought about by Covid-19 crisis, and this will cause many children who require intensive support to regain skills lost or not progressed during this period. Only a small percentage of one-to-one teaching assistant support could be provided online, and once again those in INMSS tended to fare better (22%) than those in state special schools (8%) or mainstream schools (9%). The figure was 17% in post-16 settings.

Although some studies reported that the pandemic had increased the anxiety levels in children generally, the Special Needs Jungle Survey cited that, for some children with special needs, being away from school had produced a beneficial effect on their anxiety levels. Respondents to this survey illustrate how different a child’s experience can be with 37% of parents reporting an increase in their children’s anxiety levels and a similar proportion (38%) reporting a decrease. Reasons for the increase in anxiety levels were cited as: concerns about Covid-19, disruption to routine, too much set work. The reasons for the decrease included: the less formal learning environment, more inclusive ways of learning, less pressure, a better understanding of a child’s needs, and reduced sensory issues.

In another study, researchers from University of Sussex School of Education and Social Work¹⁸ surveyed more than 500 parents to explore the experiences of parent carers of children with SEND during the time of the Covid-19 limited school provision (23 March – 1 July 2020) and

informed schools about parental perspectives and the transition back to school and ongoing SEND provision. Their results show that four in ten parent carers of children with SEND felt they received no support from educational or other agencies during the lockdown. The recommendations included schools planning a gradual return of children to school and ‘being prepared to incorporate technology, phased returns, one-to-one support, small-group work, social stories, checklists and visual supports to support children to transition back to full-time education, as well as incorporating home learning preferences established over lockdown to allow them to be continued in the classroom.’¹⁹ Parents in the study also suggested using technology to further engage families into the school day by virtual tours for pupils in addition to a checklist or social stories.

A survey conducted by Parent Ping on 30 July 2020 asked about parental concerns and categorised responses from parents with a child or children who had SEN and an EHCP, parents whose child/children had SEN but did not have an EHCP, and parents whose child/children did **not** have SEN. Figure 25 shows the results from this survey and illustrates that the greatest concern for parents whose child/children had an EHCP was returning to school in September (64%), whereas the greatest concern for parents with children without an EHCP or without SEN was someone in the family catching Covid-19. Financial worries were also a greater concern for parents whose child/children had an EHCP, 43% selected this response, compared to 18% of parents with a child or children with SEN, but no EHCP, and 16% of parents who do not have a child with SEN.

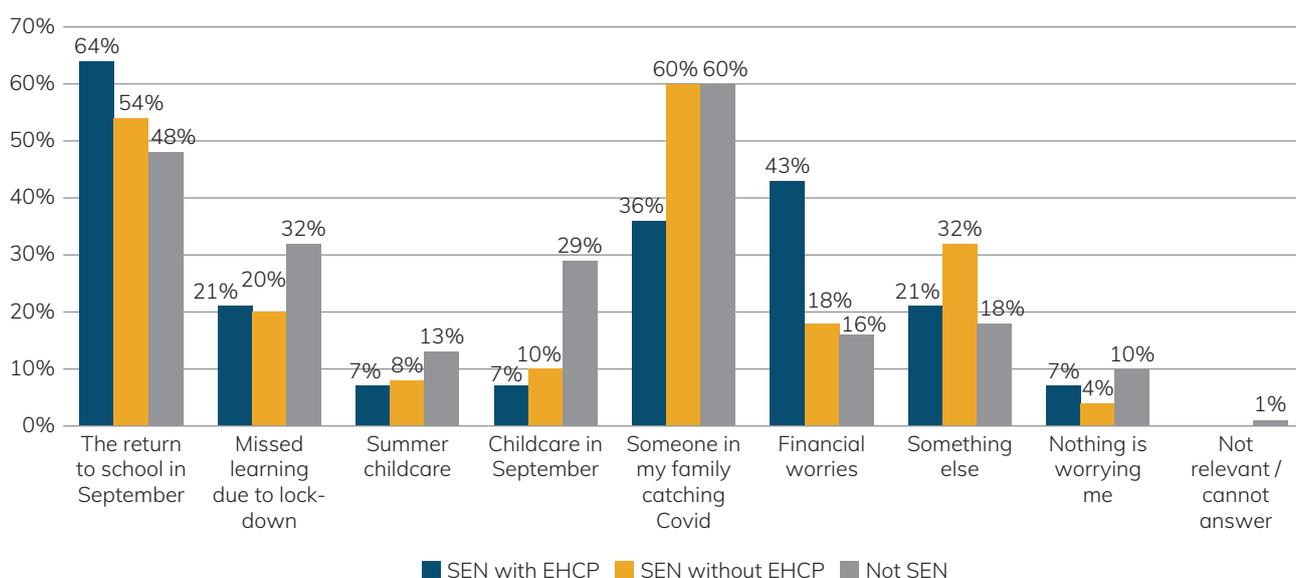


Figure 25: What SEN vs non-SEN parents are worried about (Source: Parent Ping 30.7.2020, n=444)

¹⁸ <http://www.sussex.ac.uk/broadcast/read/52612>

¹⁹ <http://www.sussex.ac.uk/broadcast/read/52612>

In our interviews, participants mentioned that SEND children were not always in school and, when that was the case, they were provided with resources tailored to their needs. However, this was not always possible and finding suitable activities was left to the parents. Schools also lent devices to families and asked for government laptop support to provide necessary devices to children. It was not always easy, but sometimes clever solutions were employed, as seen in the following statements by our interviewees:

'[...] we gave them a sandpit, and we gave them a water tray for their back garden. We gave them lots of the sinking and floating equipment or the sand or the shells.' [Martin Lumb, Headteacher, State Primary]

'We tailored our learning for SEND children. We mostly used SLSO (SMART Learning Suite Online), within Google Classroom. You can set different children different learning and they only see what they're actually set. In SLSO we set different learning for some individuals or groups of children. For some of the children, the learning may for example be to create videos of themselves doing learning, complete varied activities, do a drawing or read and answer questions to demonstrate what they now know. Read a book with your parent and using SLSO to put up a recording of that. Different activities to keep what they'd already learnt within school moving forward and ensure that learning was not dropping off. What we did also was we'd put teachers reading stories, every week in their Google Classrooms and the SLT would also read to the children, which was fantastic! Children's comments which they put in the stream in respect of this were really sweet! It was very important that the children could see that their teachers, teaching assistants and members of the SLT were reading and engaging with them.' [Stella McCarthy, Computing Coordinator, State Primary]

For an up-to-date review on technology-led interventions for specific learning difficulties, please see Luckin et al., 2020.

Theme 5: Inconsistent infrastructure

The PISA data from 2018,²⁰ which was released in October 2020, demonstrates some features of the infrastructure that were in place before lockdown and that affected education in unequal ways. The UK does well in terms of both students having access to a personal computing device and the provision of broadband connectivity in comparison to many other OECD countries; 96% of students who attend advantaged schools in the UK reported having a computer for schoolwork at home. However, only 88% of students in disadvantaged schools responding to the same question reported that they also had a computer at home for schoolwork. Broadband internet access is comparable to more affluent OECD countries, but it is not evenly distributed.

The lockdown and further restrictions resulted in learning becoming far more dependent on personal computer and internet access within students' homes. In settings where a computer was available in the home, its use may be contested by siblings also requiring access for learning and by remote working parents. Teachers from disadvantaged schools (12%) reported that more than a third of their class wouldn't have adequate access, compared to concerns about access in most affluent state schools (3%) and private schools (4%) (Cullinane and Montacute, 2020). One of our teacher interviewees noted:

'actually, the children who didn't have access to technology [...] there were some who either they had sort of five children on one computer, or they didn't have a printer or something else that make[s] it difficult for them to access things that were sent. If they let the school know that they were given paper copies of things, but they had [...] to sort of be able to get to school to let us know.' [Teacher, State Primary]

Research by Cullinane and Montacute (2020) reported that, when parents were asked about the number of internet-enabled devices in their home, the median figure was four, but 20% of homes reported seven or more devices. One parent we interviewed also highlighted how schools were stepping in to provide devices for students without access to any:

'So they, for those that didn't have laptops, they ['They' is referring to the school providing chromebooks for the children that didn't have them] provided Chromebooks so that everyone could access resources.' [Matthew Harker, Parent]

²⁰ https://www.oecd.org/pisa/Combined_Executive_Summaries_PISA_2018.pdf

Schools in more deprived areas were not only struggling financially,²¹ but they also had to help their students with devices. About one in five teachers in state schools (21%) reported that their school was providing pupils with laptops or other devices to mitigate inequality gaps (secondary 31%, and primary 11%). However, affluent schools were still able to provide more laptops than disadvantaged schools (28%, compared to 15%) (Cullinane and Montacute, 2020).

During lockdown, parents reported spending money on learning, on extra books, resources, subscription to apps or websites, or on electronic devices. Twenty-four per cent of parents spent less than £50 and 14% more than a hundred pounds in the week after schools closed. Moreover, many families supported their children's learning with additional tuition if they could afford it (Cullinane and Montacute, 2020).

Improving digital access is one of the three priorities identified by McNeil et al. (2020) and echoed by almost every study reviewed in this report. As seen in the following statement by an headteacher interviewee, it will be critical to get the government to think about broadening digital access, especially for children in disadvantaged groups so that the existing inequalities and disengagement will not increase.

'[...] and we were able to use the three laptops that we got from the government scheme for vulnerable children. Three. Three. Yes. [...] about the fact that you can't get the broadband for the vulnerable families unless you're a secondary school because that's a different issue I have with the scheme today.' [Interim Deputy Headteacher, State Primary]

Although this may look like a technical issue, it is also necessary to help children to gain the necessary skills and disposition to be able to use technology effectively for learning. One of the biggest areas of concern for teachers is the children who are least engaged during remote learning.

²¹ <https://www.nfer.ac.uk/the-implications-of-Covid-19-on-the-school-funding-landscape/>

School attendance

There are various ways in which we can interpret the meaning of educational infrastructure, and the levels of education possible to learners who can,

and cannot, access that infrastructure. Figure 26 shows a map of children refusing to go to school and thus cutting their access to the education provided by physical attendance.²²

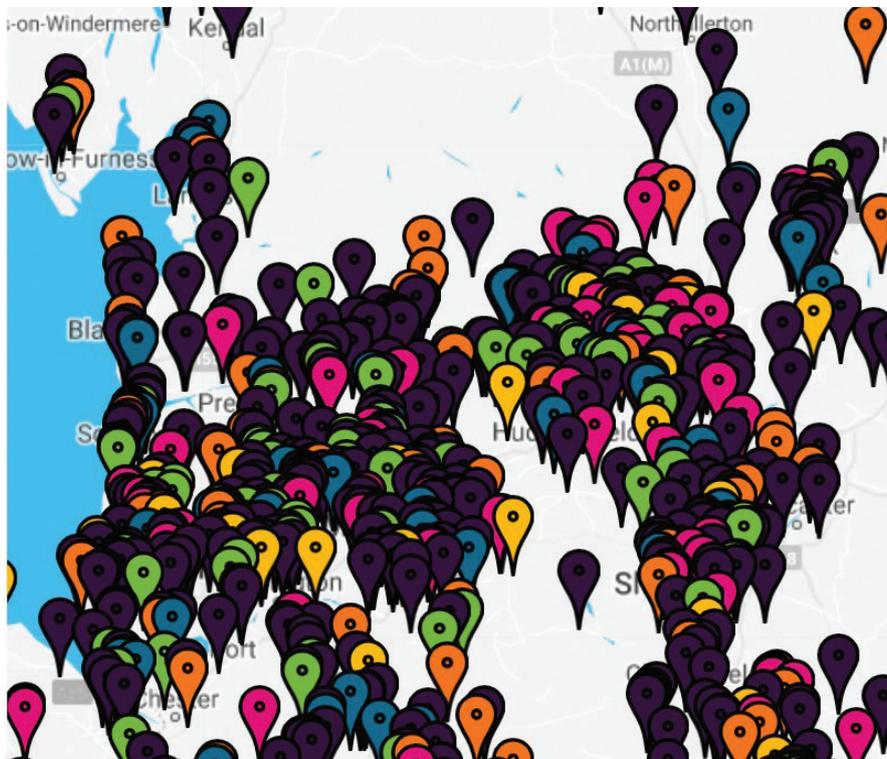


Figure 26: SquarePeg attendance map (see <https://www.teamsquarepeg.org/map-campaign>), showing the prevalence of 'school refusal' in the North West of England.

The increase in numbers of pupils refusing to attend school is an increasing matter of concern reported in the mainstream media. The Guardian newspaper reported on 14 November, under the title "It was damaging him": the spiralling number of children refusing to go to school',²³ that government data from 2018–19 indicated that 770,000 pupils were persistently absent in England, with an increase in the numbers of pupils who miss more than half their schooling from 39,000 in 2015–16 to 60,000.²⁴ The Covid-19 pandemic is likely to be making this situation worse, with OFSTED reporting that of the 121

school visits conducted in October 2020, a third of schools reported an increase in the number of pupils not attending school or leaving to be home educated. Campaign group 'Not fine in School'²⁵ reported that almost 1,000 new members had joined their closed Facebook group since the start of the school term in September 2020, an increase in membership of 8%.

With government referring to physical attendance at schools as a central evaluation metric and a moral duty,²⁶ and threatening parents with fines,²⁷ there was nevertheless reduced attendance as a result of Covid-19.²⁸

²² <https://www.teamsquarepeg.org/map-campaign>

²³ <https://www.theguardian.com/education/2020/nov/14/it-was-damaging-him-the-spiralling-number-of-children-refusing-to-go-to-school>

²⁴ <https://www.gov.uk/government/statistics/pupil-absence-in-schools-in-england-2018-to-2019>

²⁵ <https://notfineinschool.co.uk/>

²⁶ <https://metro.co.uk/video/boris-johnson-assures-schools-safe-reopen-september-2226816/>

²⁷ <https://www.theguardian.com/education/2020/nov/14/it-was-damaging-him-the-spiralling-number-of-children-refusing-to-go-to-school>

²⁸ <https://www.bbc.co.uk/news/education-54908149>

Theme 6: Trust

The educational, social, and economic implications of Covid-19 are an uncharted territory for policymakers and the decision-makers, in local and national governments, as well as for teachers, learners, and parents. In this section we discuss evidence that relates to trust in government and trust in the online world.

The uncertain and dynamic reality of the school lockdown led to the daily reliance of schools on

government advice, support and guidelines. Figure 27 and the full table in Appendix H (containing 141 entries, as documented until the end of October 2020, and providing further details), clearly show a timeline of confusing messages and an ever-changing stream of instructions and advice from the government. These instructions changed, often quite rapidly – and occasionally even disappeared from the Department for Education website,²⁹ and contained multiple conflicts in the advice and guidance they provided.

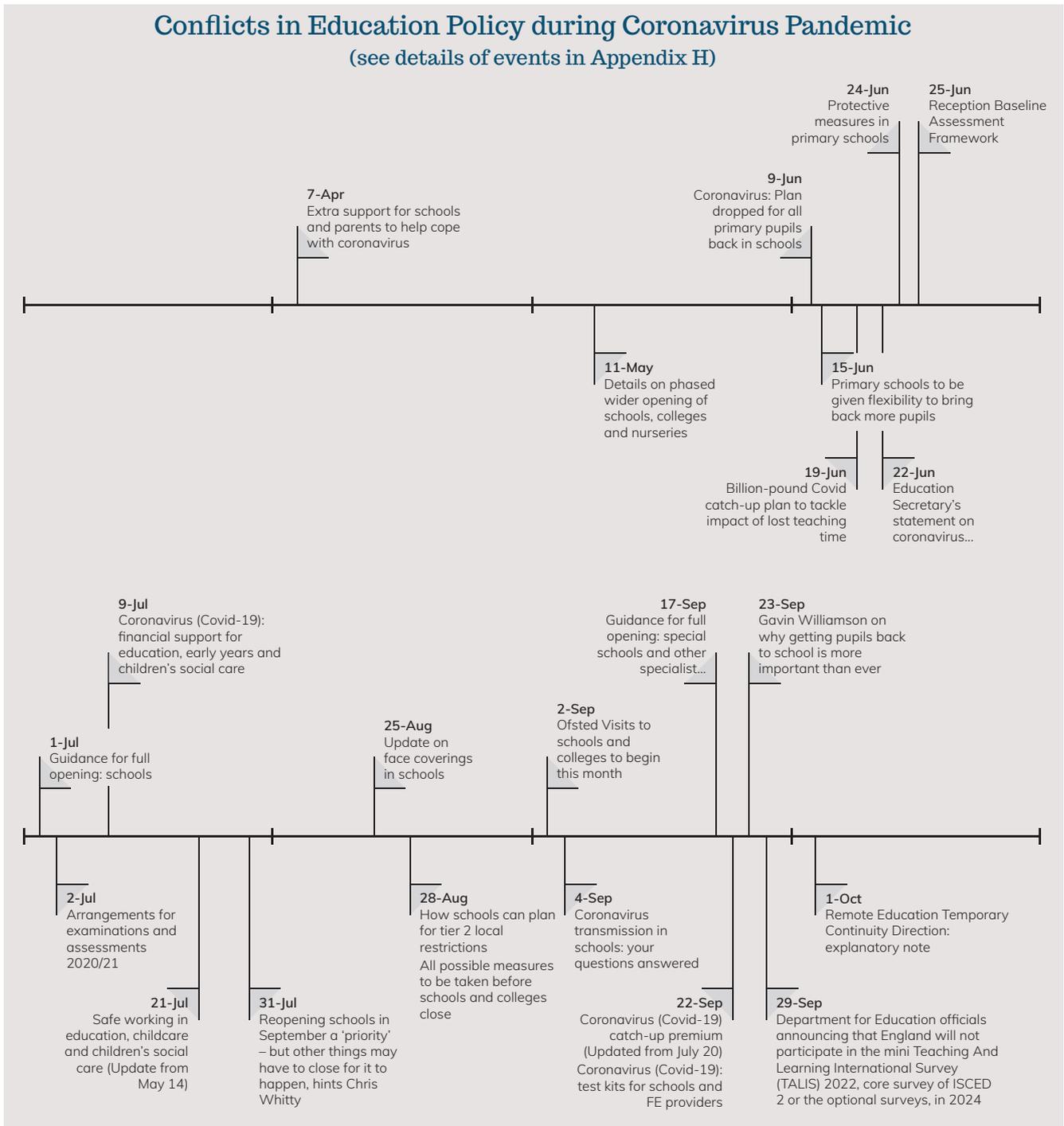


Figure 27: Conflicts in education policy during the Covid-19 pandemic (details in Appendix H)

²⁹<https://www.tes.com/news/hapless-dfes-school-Covid-guidance-goes-missing>

A ParentKind³⁰ survey showed that seven in ten parents felt the government is managing children's education during the pandemic 'not at all well' or 'not very well,' and more than three quarters (76%) of parents felt that the government has not listened to them.

Headteachers were left confused and having to make decisions with incomplete information. In Chapter 5 of this report, the evidence of this confusion becomes clearer. The challenge of trying to manage the confusing messages and guidelines from the government was high on almost all of our respondents' lists of concerns, and the extent to which they felt supported by the government was almost negligible.

One of the headteachers we interviewed told us:

'I know there are points at which I get more guidance, and I physically look at it. I can't even bring myself to open it right now. Because you just get saturated with it. I think one of the things that would have helped enormously is if when they updated something, they told you, which part of that document had been updated, rather than just sending it out, and then you having to trawl through it, to find the bit that was new or different. And I think it would have been really helpful to have a clearer idea, early on, about what was actually statutory and what was guidance. I think that was quite confusing. And I think as with lots of headteachers in particular, we were quite upset by some of the messages that the government were giving having done our absolute best to respond to all of the guidance to them which you then didn't need to do.' [Headteacher, State Primary]

Other interviewees commented that the guidelines would have been useful if they had separated out the recommendations and statutory sections and if they had been released with time for schools to read and act on them:

'It was good. I liked having guidelines. But I liked having guidelines that were released at 12 o'clock in the afternoon, not midnight. Because when they were released at midnight, I was often on the playground at 8.45 welcoming the key worker kids and the vulnerable kids, answering questions about government policy that I didn't actually even know was government policy.' [Martin Lumb, Headteacher, State Primary]

³⁰ <https://www.parentkind.org.uk/uploads/files/1/Coronavirus%20Parent%20Survey%20-%20England.pdf>

Trust in the online world

Concerns about the use of surveillance or tracking technologies that allow EdTech companies to collect information about students is a long-standing issue.³¹ During the lockdown a wide range of apps and online software were used for learning. Most of our interviewees reported using Microsoft Teams and/or Google Suite. Most of these were provided free to schools during the lockdown, and most schools quickly set up accounts for pupils, if they did not already have them. However, many companies did not consider safeguarding issues due to the urgency of the need to go online (among other reasons). Most of our interview participants mentioned that safeguarding was at the forefront of their provision for remote teaching. In primary schools, particularly, safeguarding and privacy were a big issue, and this stopped some schools from engaging with particular pieces of software. Research by Avast³² shows that more than one in five children (21%) admit to having had bad online experiences during the Covid-19 lockdown. Of those who cited negative online experience, 72% had received unkind messages, 72% had received unsolicited and inappropriate content, 71% had received unwanted contact from a stranger, 67% had received a malicious video call, and 58% had accidentally downloaded a virus onto their device.

From the parents' perspective, it was not always clear why safeguarding was an issue for the school:

'And the plan, the feedback I got was we're not going to do any online learning because safeguarding, which I thought was a real cop out. The safeguard at their age is just an adult in a room and it has to be in a downstairs space. That's a complete utter cop-out.'
[Judy Ripley, Parent]

One of the big debates in the global educational community is about whether to ask, or demand, students to use their cameras during remote synchronous lessons. While delivering a synchronous lesson with cameras on is a privacy hazard, shutting the cameras off might lead students to be more distracted.³³ It is worth bearing in mind that the whole discussion is based on the notion that a camera, or in general a synchronous interaction, is the most similar experience to the kinds of experiences students are used to from face-to-face teaching. However, online synchronous learning can be very cognitively overloading (for example, for the students to watch themselves during long periods, or having to watch the teacher's and peers' talking heads, which can be tiring). In addition, online learning opens a whole new world of asynchronous learning delivery, use of smaller groups, and many more affordances that could potentially ease many of those privacy debates.

³¹ https://www.edweek.org/ew/articles/2014/04/16/28privacy_ep.h33.html

³² <https://EdTechnology.co.uk/schools/one-in-five-children-under-12-admit-to-having-bad-online-experiences-in-lockdown/>

³³ <https://www.popsci.com/story/science/media-multitasking-memory-neuroscience/>

Chapter 4: The EdTech sector and the EdTech companies

The EdTech sector

The findings from the multiple Covid-19 studies reviewed in this report show very clearly that EdTech has, and continues to be, an important factor in sustaining learning and communication between teachers and students. During school closures, many children struggled to learn at home, and some of them fell behind. EdTech became a lifesaver for some teachers, parents, and learners. Many EdTech companies provided free support to help alleviate the effects of the pandemic on learning. Going back to school also resulted in increased use of EdTech.

The UK (and London specifically) is one of the world's top destinations for education and learning technology.³⁴ There are 1,200 EdTech companies based in the UK, 1,000 of which are based in London.³⁵ Thirty-five per cent of all European investment in EdTech companies goes to the UK. This equates to £178 million per year and means that the UK attracts the highest amount of venture capital and angel funding investment in its EdTech companies of any European nation.³⁶ The UK is expected to be worth £3.4 billion by 2021 (out of a total £100 billion UK education market) and is growing at 22% year on year. Based on a sample of 102 EdTech companies, the average expected growth of EdTech companies in the 2020–22 period is expected to be 29% per year.³⁷ This is to be expected given that 99.5% of UK EdTech companies are SMEs by the European Commission's definition, i.e. they have revenues of less than £40 million per year.³⁸ UK EdTech exports currently generate £170 million per year.³⁹

To find out more about the EdTech company community within the education ecosystem, we conducted a second round of surveys with EdTech companies (start-ups and SMEs) to find out more about how they were coping with the pandemic and what they were learning. Figure 28 shows the distribution of company size amongst our responses and illustrates that the majority of companies (77%) had ten employees or less and only 5% had more than 100 employees. There are estimated to be around 1,000 small- and medium-sized companies, including start-ups, in Britain that are involved in EdTech. This includes large, small, and start-up ventures.⁴⁰ It is hard to estimate how many of these companies are SMEs or start-ups (less than 250 employees), but it is reasonable to suggest that our survey sample represents about 5% of this community.

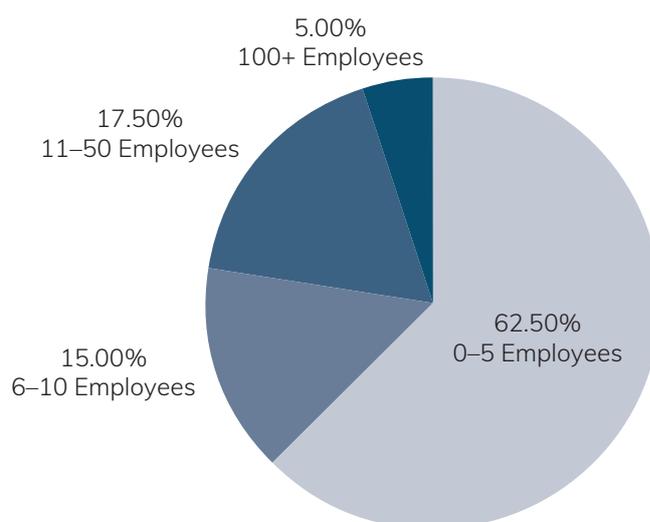


Figure 28: The size of EdTech companies in England responding to the survey, sampled in September/October 2020, n=41

³⁴ https://www.ednfoundation.org/wp-content/uploads/EdtechUK_LP_report.pdf

³⁵ <https://edtechnology.co.uk/latest-news/the-uk-ranks-1-in-edtech-venture-capital-funding-in-europe/>

³⁶ <https://edtechnology.co.uk/latest-news/the-uk-ranks-1-in-edtech-venture-capital-funding-in-europe/>

³⁷ <https://www.fenews.co.uk/press-releases/47967-embargoed-coronavirus-crisis-puts-spotlight-on-uk-edtech-companies-as-schools-and-teachers-embrace-online-learning>

³⁸ <https://edtechnology.co.uk/latest-news/2020-vision-edtech-in-2020-with-alexander-shea/>

³⁹ <https://www.gov.uk/government/news/edtech-strategy-marks-new-era-for-schools>

⁴⁰ <https://www.ednfoundation.org/wp-content/uploads/Edtech-UK-Vision-2020.pdf>

Within this sample, Figure 29 illustrates the target audiences towards which these companies focus their products and services. A large number focus

on school aged learners, but there is a substantial group of work with post-16 learners in colleges, the workplace, and higher education.

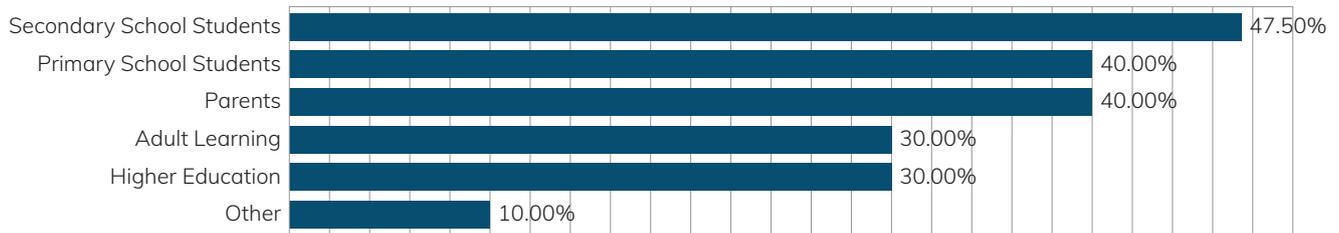


Figure 29: Target audience of EdTech companies in England, sampled in September/October 2020, n=41

The sort of technology used and the way it changed over time

We wanted to probe the manner in which teachers, parents, EdTech companies, and school leaders reported on their schools' technology use over the past eight months. Figure 31 shows the results of this exploration and illustrates

that the most popular activities for schools were live (synchronous) lessons, digitally marked assignments, and the provision of downloadable activities. There was also a substantial number of respondents who reported their use of subject-specific software and technology to support collaborative learning.

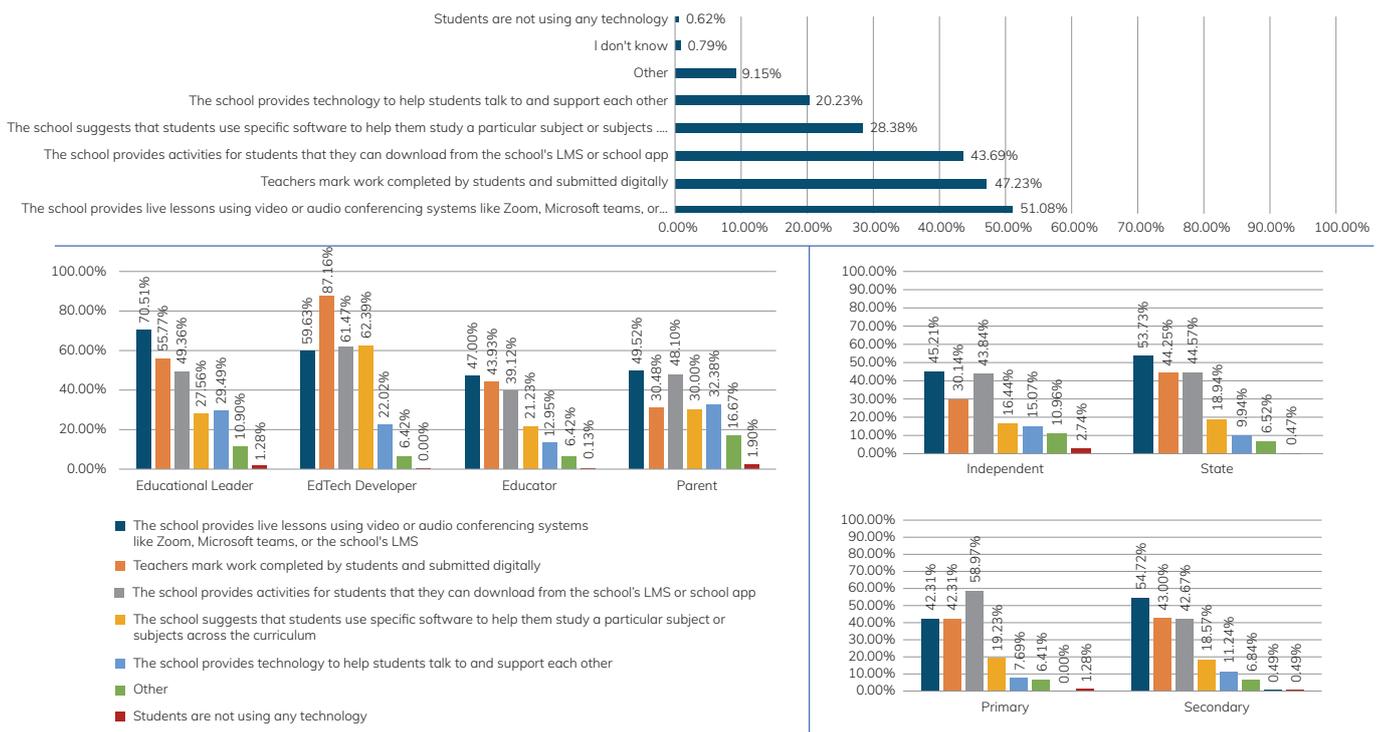


Figure 30: Technology used by all educational stakeholders (upper figure), and broken down by role (EdTech developer, educational leader, educator, and parent) - bottom left, by school type (state or independent) and by school level (primary and secondary) - bottom right, n=1,300

When looking at the breakdown of technology used (as shown in the lower half of Figure 30), it is clear that primary schools put more emphasis on asynchronous, as opposed to synchronous, learning and that independent

schools used more collaborative learning than state schools.

We also asked our respondents to what extent they were using, offering, or recommending free or reduced-price technologies. All of the

educational leaders, a third of the teachers, and almost half of the parents who responded reported using or recommending free technologies,

as can be seen in Figure 31. Almost two-thirds of the EdTech company respondents reported offering free technologies during the lockdown.

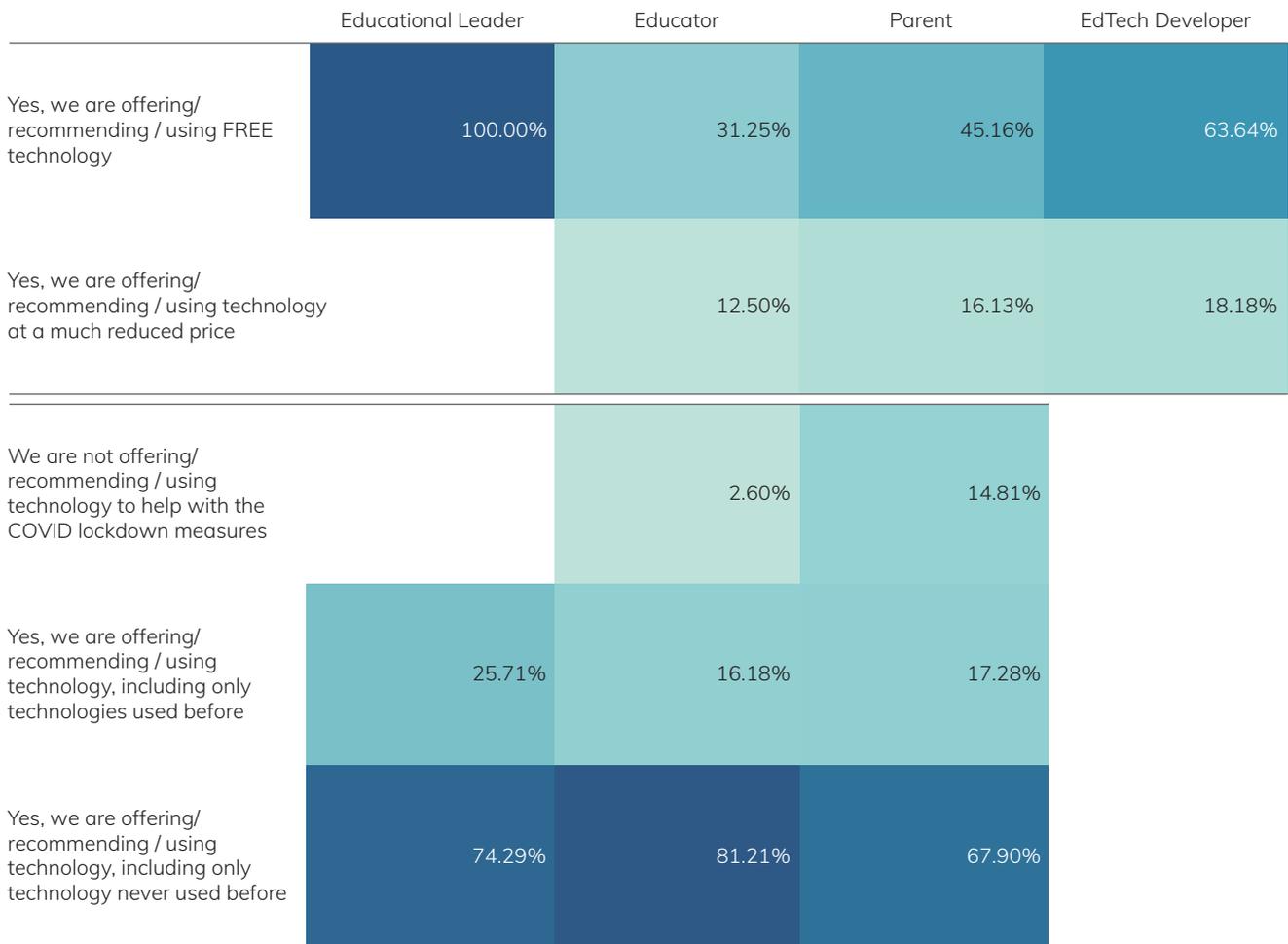


Figure 31: How many of each role are using technology at a reduced price or free (upper figure) and are they using new tech or just tech used before (bottom figure)

When asked if they were using, offering, or recommending technologies they used before Covid-19 or using new alternatives, more than two-thirds of educational leaders (74%), teachers (81%), and parents (68%) reported using or recommending technologies that included resources they had never used before. In comparison, 26% of educational leaders, 16% of teachers and 17% of parents said that they were only recommending or using

technologies they had used before. Figure 32 shows the same data as Figure 30 but distributed temporally across the period from 22 April to 4 September 2020. We can see that there was an increase in technology use in the spring and

during lockdown, including technologies not used previously. Educational leaders reported less technology use and their pattern of usage was not evenly spread over the months. Teachers and parents' use of technology was more evenly spread.

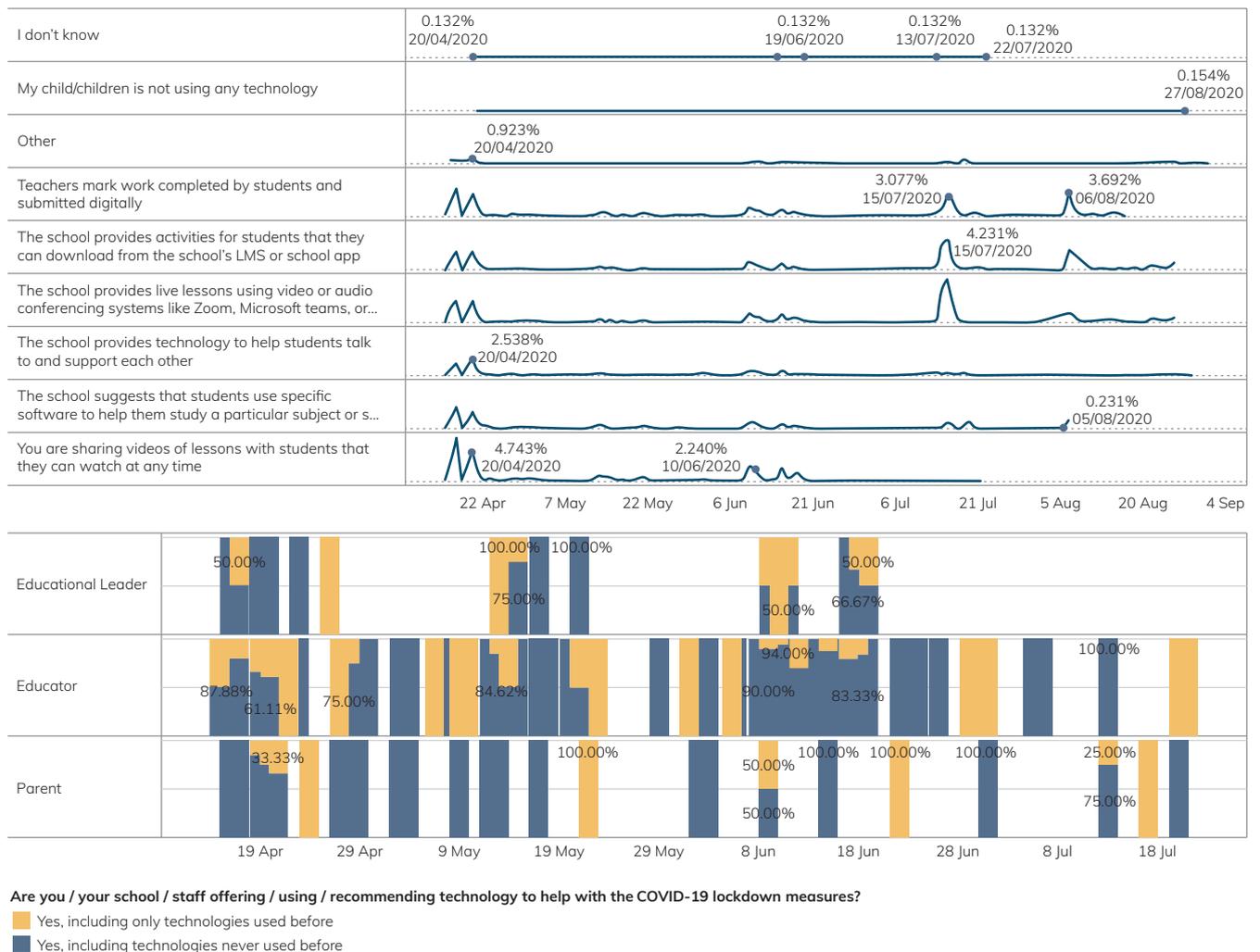


Figure 32: Timeline of type of technology used (upper figure) and timeline of the split between new and already used technology (bottom figure)

EdTech learning from lockdown

The lockdown provided an unexpected opportunity for EdTech companies to introduce new technology to the educational sector. Companies who offer EdTech, and some that were not previously particularly active in the education space, increased and/or changed some of their products and/or services in response to the Covid crisis. For example, Amazon introduced Amazon Kids offering books, videos, music, and educational content. Zoom also made changes to its products and practices to address educational requirements.

We wanted to know if the companies we surveyed were using this opportunity to collect data to learn about how their products and/or services were being used.

Figure 33 shows the patterns of data collection amongst the EdTech companies we surveyed,

as sampled in April, June, and then again during September/October. It is evident that the number of companies that collected no data reduced from 30.43% at the beginning of lockdown to 10% by the time the school year re-started in autumn 2020. The highest increase in the data collection method involved using interviews (from 4.35% in April to more than 50% in September/October).

However, data collected via interviews provides useful but limited information so we asked what other data sources our EdTech respondents were using to collect evidence about their products or services.

The data collection method that would be the easiest to scale is the use of logs or clickstream data to collect evidence about the way a product or service is being used, and yet the adoption of this data collection method increased the least, moving from 26% in to 32% in September/October.

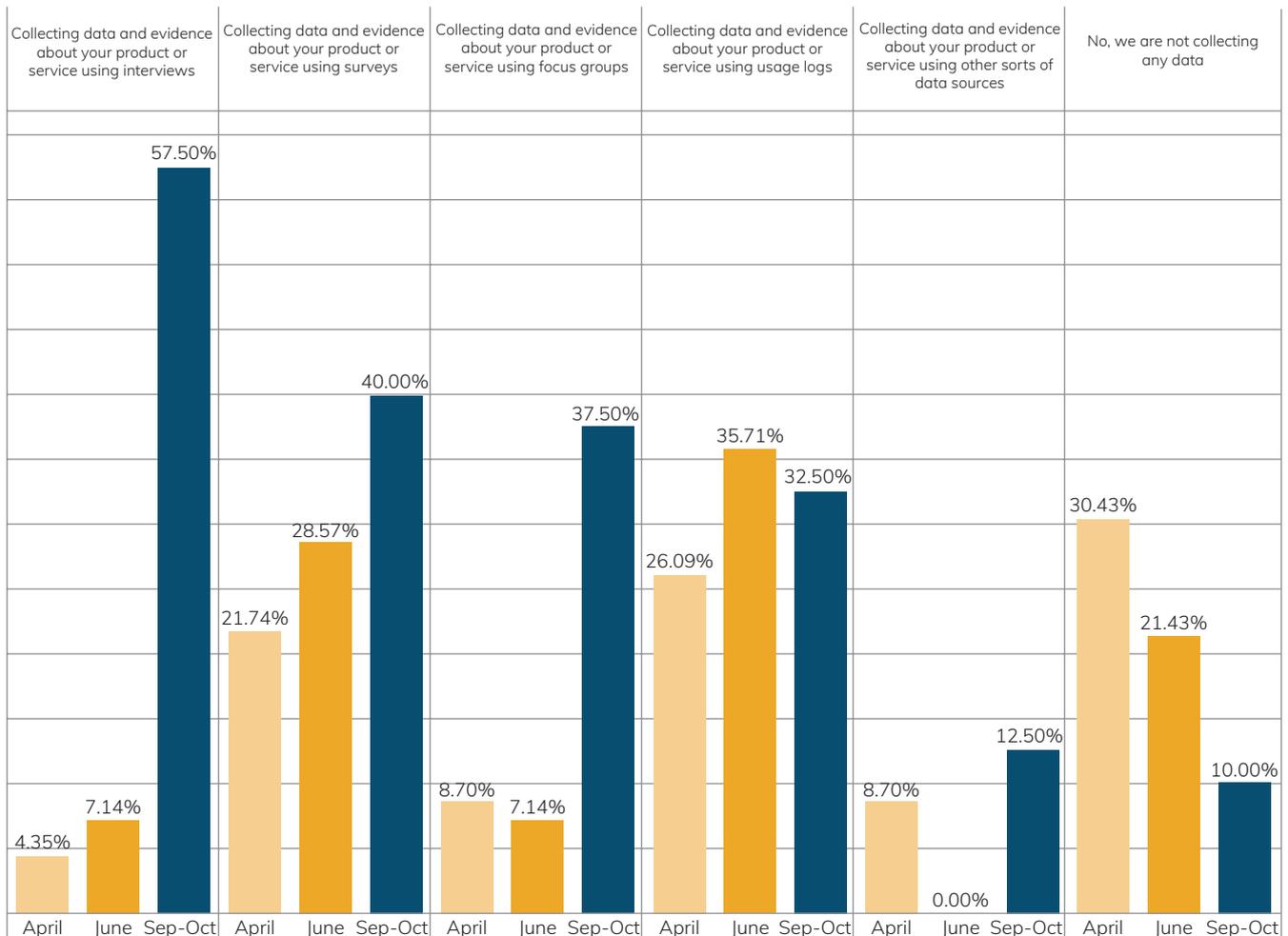


Figure 33: EdTech company use of data, sampled in April, June and September/October 2020, n=78

Figure 34 shows the plans that EdTech companies were making to change their product as a result of the lockdown. There was initial enthusiasm amongst respondents to adapting their product or service during lockdown, with 39% reporting that they had thought about changes and were starting to plan

how they would make them, and 57% reporting that they had already made changes in May 2020. In the Autumn of 2020, the number of respondents thinking and planning was 36%, a slight dip from May 2020, and the number of respondents who said they had already made changes was 46%.

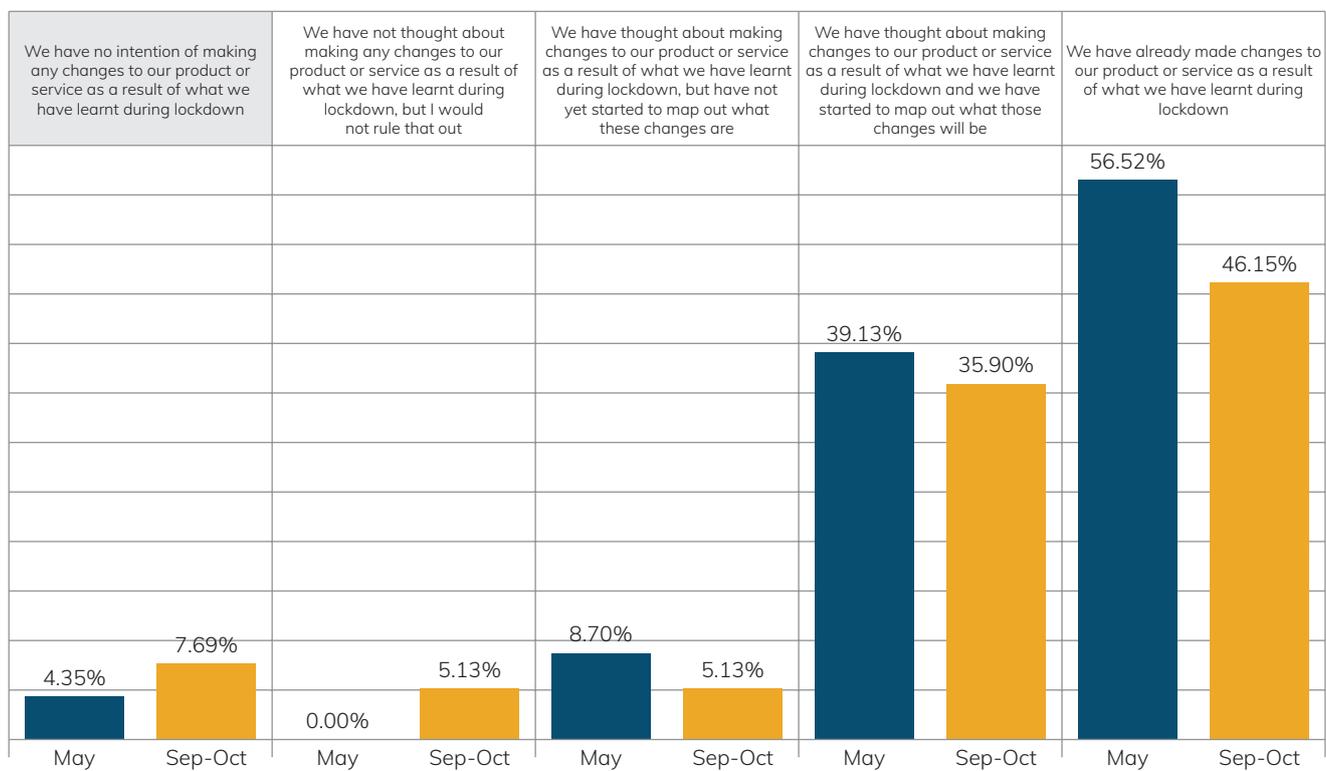


Figure 34: EdTech companies reporting changes to product or service as a result of lessons learnt from the lockdown, sampled in May and September/October 2020, n=63

The nature of the changes made to products or services by EdTech companies as a result of lockdown learning is reflected in Figure 35, which illustrates the main types of changes that companies made. It illustrates that the most

common adaptations were to take the product online, add functionality to support home learning, expand functionality, and scale or to build in support specific to Covid-19 restrictions, such as social distancing.

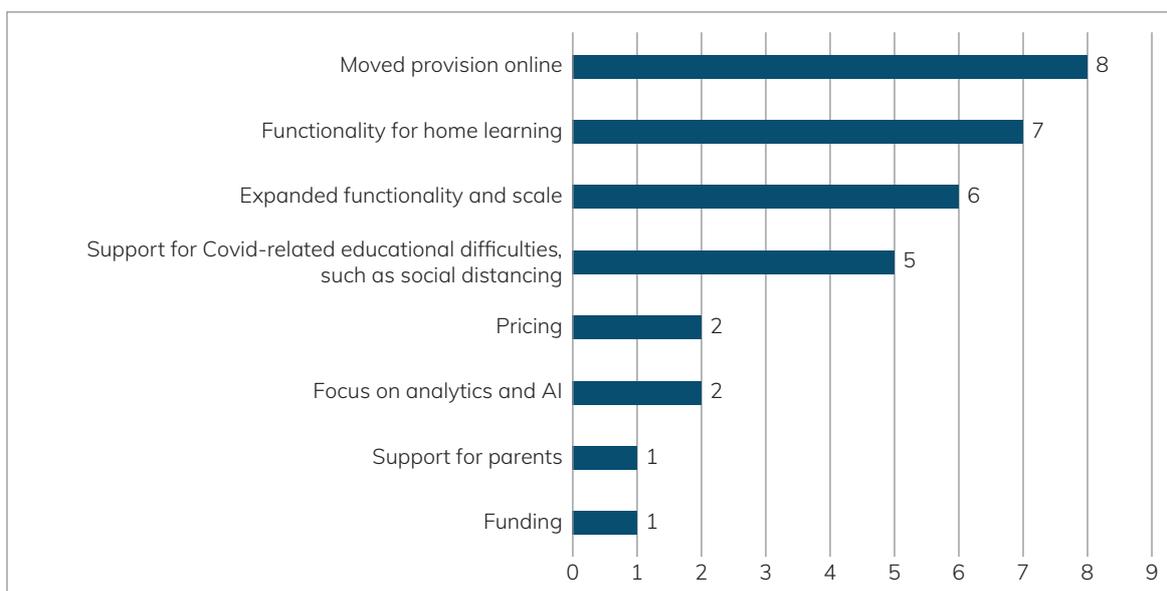


Figure 35: Main types of changes, as reported by EdTech companies, n=32

EdTech companies' concerns and support

When asked in April, June, and then again in September/October 2020, the most pressing concern reported by EdTech companies in April was paying rent on company premises that were not being used during lockdown, which rated 4.9 on a scale of 1 to 10. This remained the main concern in June, with a raised rating of 5.08. By the autumn of 2020, the main concern being reported was the onboarding of too many customers for the companies to be able to meet their needs effectively, rated 5.07.

In April, the third most highly rated concern was inadequate or inaccessible government support, rated 4.47, but this had reduced to the least-rated concern by the autumn of 2020 with a rating of 3. In June, the main concern remained paying rent, but worries about staff being ill was now the second highest rated concern at 4.25 and concerns about supporting staff who were working remotely had increased to 4, which made it the fourth highest-rated concern.

Worrying about when lockdown or Covid-19 restrictions will end and what that will mean for business was not rated highly as a concern, but it did increase over time, rising from an initial rating of 3.18 in April, to 3.42 in June and 3.55 in the autumn of 2020.

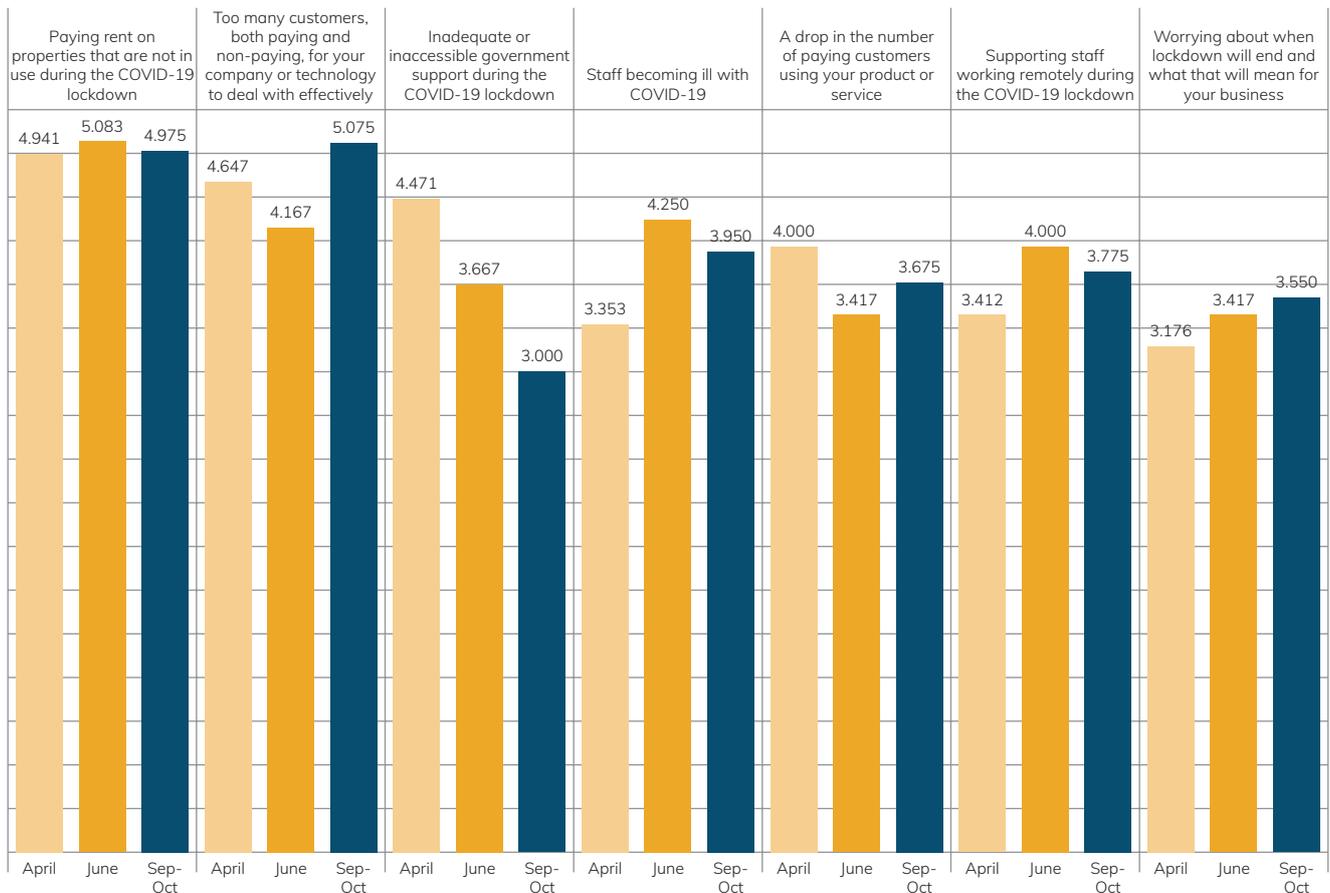


Figure 36: English EdTech companies' main concerns on a scale of 0 to 10, sampled in April, June, and September/October 2020, n=70

EdTech companies' concerns about paying for physical properties did not change significantly and stayed very high on the list. Figure 37 shows how our respondents dealt with working in the office or at home. Forty-five per cent of the companies reported that their staff were all working remotely, with 27.5% in rented premises, and 17.5% in a shared workspace.

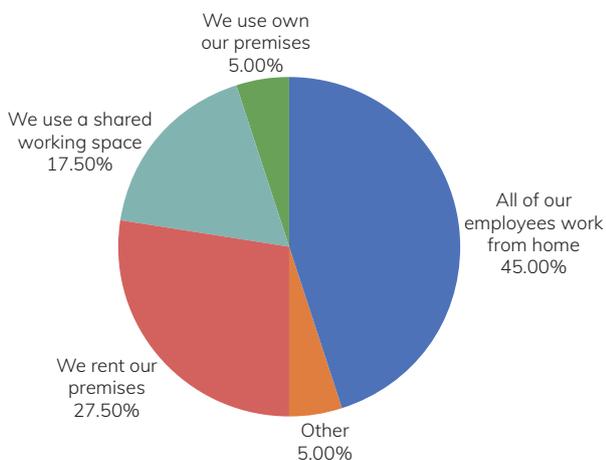


Figure 37: Premises of EdTech companies in England, sampled in September/October 2020, n=41

In the same way that we were interested in how other educational stakeholders were being supported during the disruption caused by Covid-19, we also asked our EdTech sample about their experiences. Figure 38 illustrates that colleagues were the most common form of support (73.39%), management (58.72%), and family (56.88%).

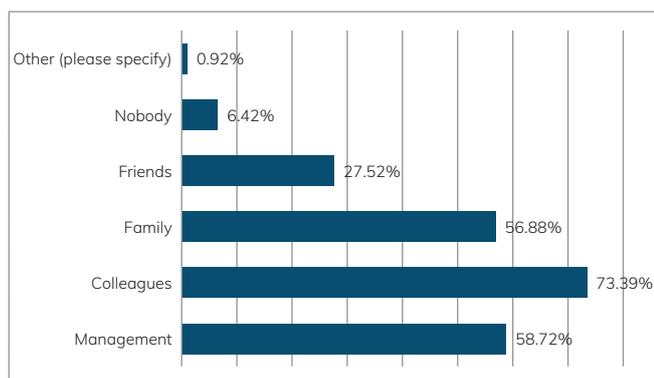


Figure 38: England EdTech companies' support systems, sampled in April and May 2020, n=110

The future outlook for EdTech

The increased use of EdTech due to the Covid-19 disruption to education could precipitate a rosy future for EdTech companies in Britain. Researchers expect that more blended learning approaches may be implemented in schools, mixing classroom and online learning, to continue the fight to reduce the detrimental impact of Covid-19 in schools and the community.⁴¹ A recent report by London & Partners⁴² and Dealroom⁴³ highlights London as the major European EdTech hub and states that it has notable potential for growth. London's EdTech ecosystem is the largest in

Europe with an estimated value of \$3.4bn, and it is the only city in Europe in the global EdTech top 10 by investment.⁴⁴ However, when we asked our EdTech respondents about their views on the prospect for the EdTech ecosystem in May and then again in September/October, the response was less positive. We have seen an increase of 10% in EdTech companies stating that the EdTech ecosystem is weaker due to Covid-19. The number of respondents who stated that they believed that the EdTech ecosystem was definitely **stronger** due to Covid-19 restrictions had dropped slightly from 22% in May to 21% in autumn 2020 (Figure 39).

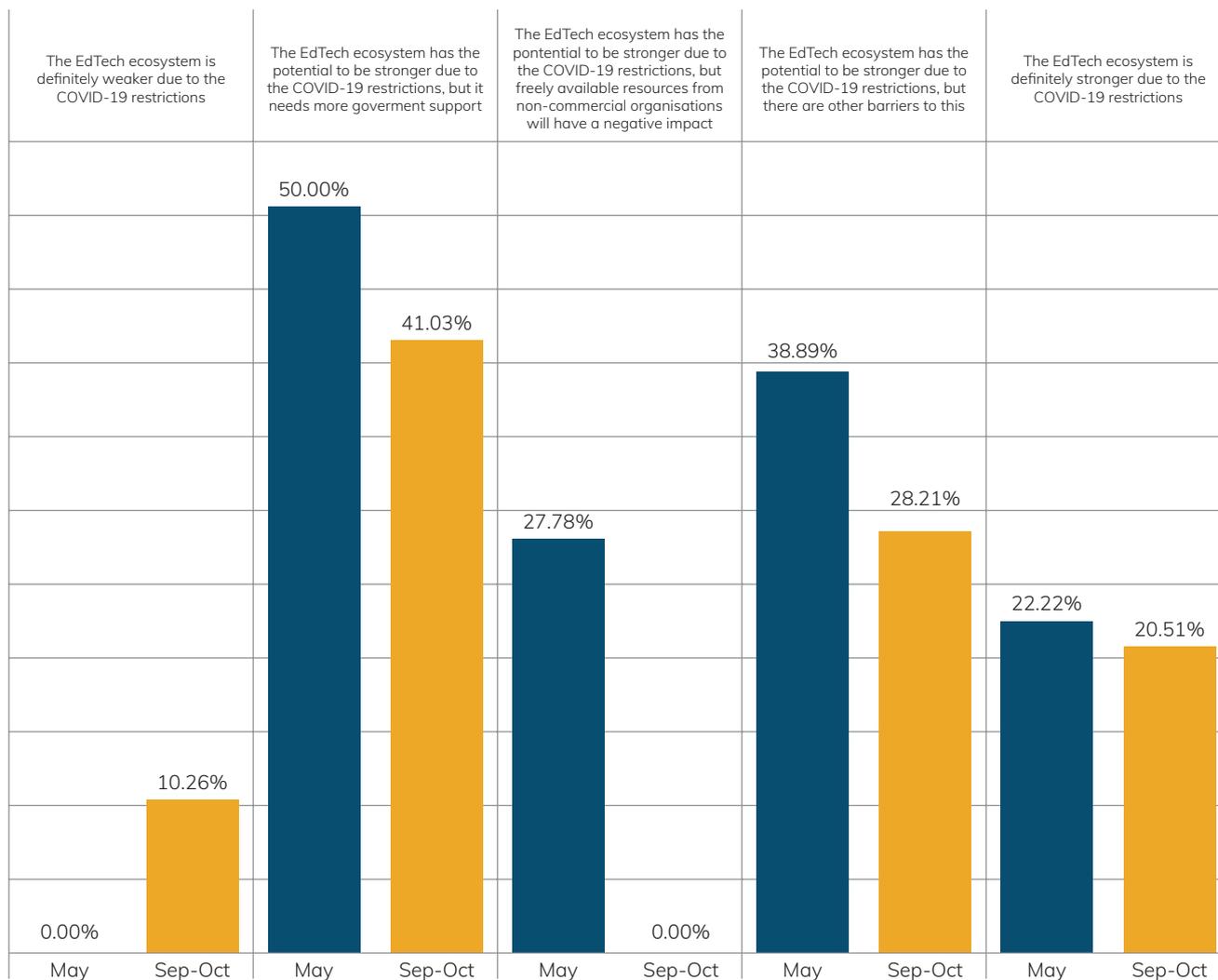


Figure 39: English EdTech companies' views on the EdTech ecosystem due to Covid-19, sampled in May and September/October 2020, n=58

⁴¹ <https://edtechhub.org/>

⁴² <https://www.londonandpartners.com/>

⁴³ <https://dealroom.co/>

⁴⁴ <https://blog.dealroom.co/wp-content/uploads/2020/09/EdTech-vFINAL.pdf>

In May, 50% of respondents reported that they believed that the EdTech ecosystem had the potential to be stronger due to the Covid-19 restrictions, but that it needs more government support. Thirty-nine per cent of the respondents agreed that prospects were good but that there were other barriers to overcome besides government support. At that point in time there was also some concern about the negative impact on the sector of free resources being made available by non-commercial organisations. However, their concern about free resources having a negative impact on the EdTech market and their concern about government support have reduced.

However, the reduced reporting of positivity about the EdTech ecosystem was not reflected in reports about EdTech company respondents' feeling of optimism. Overall, when asked if they were generally more or less optimistic about the future than they were before Covid-19, EdTech respondents reported increased levels of optimism between May and autumn 2020, moving from 26% saying they are more optimistic about the future than they were before the Covid-19 pandemic in May to 49% in autumn 2020 (Figure 40).

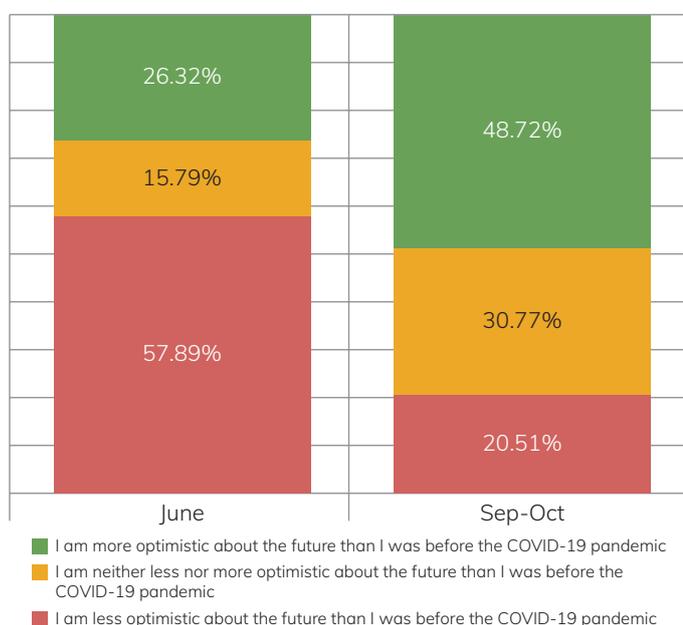


Figure 40: English EdTech companies' optimism, sampled in June and September/October 2020, n=59

The World Economic Forum⁴⁵ examination of the effects of Covid-19 on education concludes that it is necessary to combine the power of technology with the power of communities: 'The factory-inspired, 19th-century model of education made sense when there were severe limitations on teaching resources. Today there are innumerable digital learning platforms powered by AI that are struggling to find customers.' Despite some concerns, that while online education works for some people, it is not effective for everyone and not in every area (for example see Selwyn and Jandric, 2020), there is an agreement that there is 'a fundamental need to belong, learn, and share'. We need meaningful communities because they are force multipliers. They make learning fun and create a peer-to-peer accountability mechanism that shapes a culture of learning (World Economic Forum, 2020).

⁴⁵ <https://www.weforum.org/agenda/2020/08/how-edtech-will-transform-learning-in-the-covid-19-era/>

Chapter 5: Not all school leaders and teachers are the same

In the spring of 2020, the closure of schools meant that education became a home-based, technology-enabled activity with limited face-to-face opportunities. School leaders found themselves in the unenviable position of balancing the provision of support to students and staff, whilst attempting to reduce the impact of school closures on millions of children, and wading through numerous pages of government guidelines and regulations. Schools leaders had to work in a context where there was little to no predictability and no certainty or end in sight. What can the evidence tell us about the impact of the Covid-19 lockdown and ongoing restrictions on school leaders and teachers?

As seen in the following statement by an interviewee, it is clear that school leaders were under a lot of pressure to make decisions and make sure their school(s) and community worked together effectively:

'[...] so those were big challenges in dealing with the volume of feedback [...] we had to negotiate which things were really legitimate, and which things were just – you know – we're in the pandemic [...] there are some things which are not going to be perfect right now [...] we were responding and reacting. We were trying to be proactive, so from a leadership perspective, trying to block out the noise of like a couple [of] really local parents, be really strategic, and also trying to get it right about supporting staff, letting those who really wanted to run, run, but also those who are less competent and maybe were doing a lot of childcare [...]' [Head of Sixth Form, Independent All-through]

Harris (2020), writing in a Compact Guides series for the Chartered College of Teaching⁴⁶ argues that leading others at a distance requires 'establishing clear protocols of engagement around online communication and collaboration to ensure the experience is positive for all participants. This includes creating boundaries around online communication with colleagues and scheduling dedicated time slots for discussion. These boundaries need to be respected to give work colleagues the time and space to do other things and to meet other needs – family, friends, etc.'

In their study, Brink et al. (2020) suggest that 85% of staff members reported that they had found school communication, as well as the expectations from them by the school leadership to be clear. When parents were asked the same question, more than 70% reported that they found the communication and messages from the school clear.

The Edurio study mentioned previously (Brink et al., 2020) reported that one in five school staff found it difficult to stay on top of their work. A closer look at the percentage of staff who found it difficult revealed that leadership and IT support staff have struggled most. This indicates that school leaders and IT support staff felt more responsible for the implementation of the remote learning activities and consequently had more responsibilities.

Another area of concern for teachers was how they were being perceived by the media and parents in terms of how they approached remote education. Ashbury and Kim (2020) interviewed 24 primary and secondary school teachers with a range of experience and carried out a thematic analysis of the interview data. They identified four themes: (1) heroes or villains?; (2) key workers or not?; (3) voiceless and disrespected; and (4) appreciated locally. The researchers concluded that 'teachers reported discomfort and distress about media reports that asked them to be heroes and criticised them as villains when they questioned the safety of staff and students returning to school buildings. They resented the negative way in which their profession has been portrayed by the media and the ramifications of public opinion. Teachers were also angry and frustrated by what they perceived as the government's refusal to consult with them as a profession, and their failure to communicate effectively. However, teachers also reported feeling more valued than ever by their students' parents'.

Support systems

Teachers' workload is an ongoing issue, even before the pandemic, as evidenced in the National Foundation for Educational Research (NFER) survey carried out October last year,⁴⁷ which found that over a quarter of the teachers who were polled were considering leaving their jobs within twelve months due to workload pressures, stress, and anxiety.

⁴⁶ <https://my.chartered.college/about/>

⁴⁷ <https://www.nfer.ac.uk/publications/lfsb01/lfsb01.pdf>

Support systems are a central mechanism for helping to reduce stress and anxiety in all stakeholder groups (Brink et al., 2020). More than 80% of parents and staff who felt involved with shaping their school's response to Covid-19 also felt they were part of the school community. Communication, and clarity of decisions and support, were the highest factor that correlated with both parent and staff confidence in a school's response to Covid-19 (Brink et al., 2020). Staff who felt that communication from school

leadership was clear were four to five times more likely to feel confident about their school's handling of the disruption than those staff who did not feel that communication was clear (Brink et al., 2020).

Figure 41 shows the support systems as reported by our survey respondents (all stakeholders except EdTech companies). More than 30% felt supported by colleagues and school leaders, and less than 2.5% felt supported by the government.

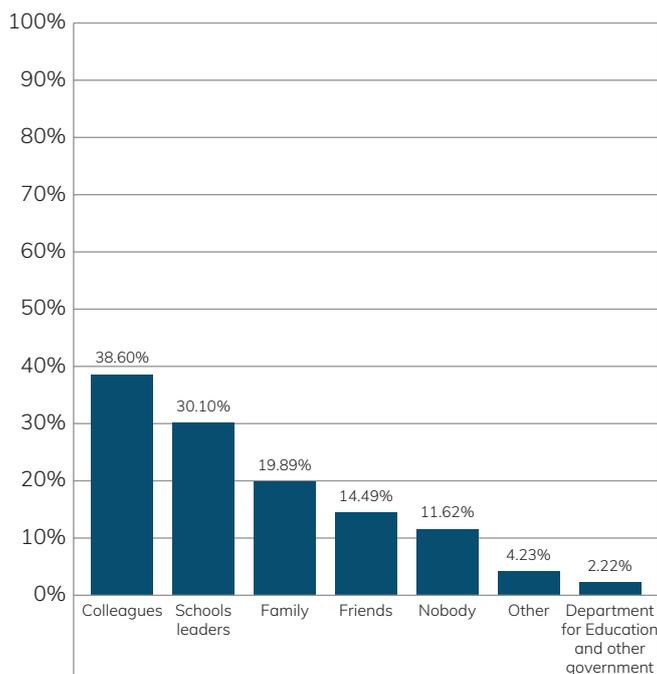


Figure 41: Support systems of respondents

When looking into the support systems used across all stakeholders (including EdTech companies) in Figure 42, it seems that overall, educators felt the least supported by colleagues. Family and friends were also important sources of support, particularly for EdTech companies.

The proportion of parents stating that nobody supported them (21%), was higher than for educators and EdTech companies, where less than 10% of respondents reported this. The feeling of lack of support by governmental agencies is clear across the board.

	Educational Leader	Educator	Parent	Educational Technology Developer
Colleagues	49.00%	24.39%	38.26%	73.39%
Family	17.00%	9.49%	21.74%	55.96%
Friends	25.00%	8.13%	13.91%	27.52%
Nobody	14.74%	9.76%	20.95%	6.42%
Other	6.41%	3.34%	6.67%	3.67%
Department for Education and other governmental agencies with guidelines and advice	1.79%	2.64%	1.05%	

Figure 42: Educational stakeholders support systems

The importance of support networks

In Chapter 2 and Figure 3 of this report, we showed that, when asked to score their personal feelings during the six months from April to July 2020, our respondents reported a decline in their feelings of positivity. We wished to explore the relationship between respondent's feelings of positivity and their responses to questions about the support available to them. In particular, we wanted to know if those respondents who felt supported by their colleagues were also the same respondents who expressed feeling more positive. We applied a Mann-Whitney U test to determine if there was a relationship between the

feelings of positivity expressed by the different stakeholder groups and their reports about the support provided by colleagues. We found some statistically significant differences that led us to conclude the support systems are a core construct of functioning educational ecosystems.

Figure 43 below shows that respondents who felt supported by colleagues reported a significantly higher ($p \leq 0.05$) positive feeling score than those who did not feel supported by colleagues. This difference is significant, although the range in values is greater amongst respondents who felt supported by colleagues as illustrated by the size of the boxes in Figure 43.

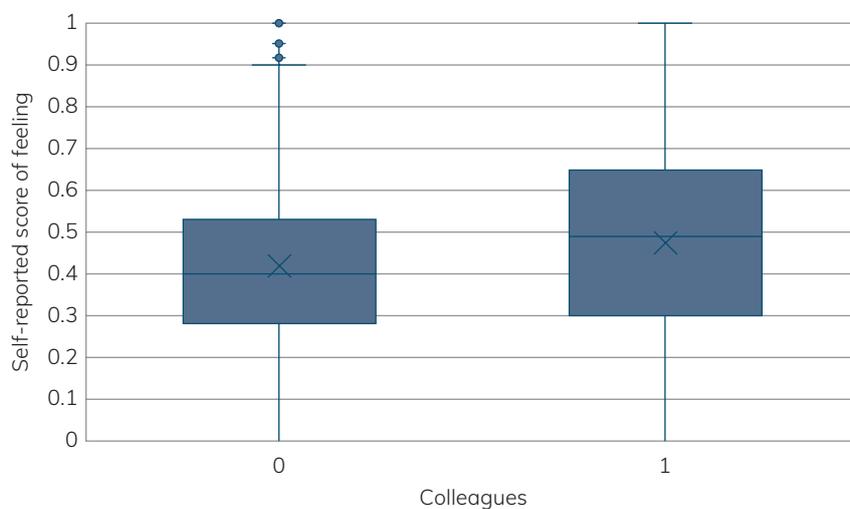


Figure 43: Differences in the reported feelings of positivity between educational stakeholders and the support provided by their colleagues

We also used the Mann-Whitney U test to look at the feelings of stakeholders relating to the support, or lack of support, of family members. This comparison (illustrated in Figure 44) shows a significantly more positive ($p \leq 0.001$) score

for those reported being supported by family members. Once again, the range in scores for feelings of positivity were greater amongst respondents who reported feeling supported by family.

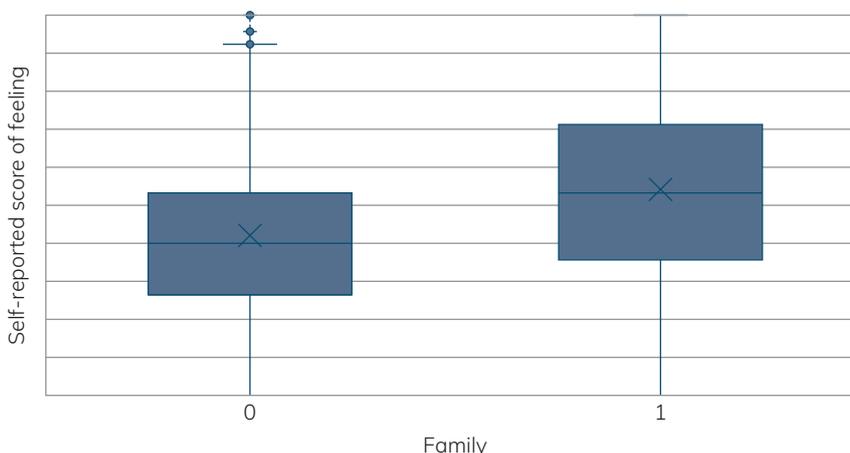


Figure 44: Differences in reported feelings of positivity and reporting being supported by family

But what about the stakeholders who reported that nobody supported them, or that they did not need support? Figure 45 illustrates the results of A Mann-Whitney U test conducted to determine if there was a significant difference in confidence in the sustainability of remote education among those who did not feel supported (Figure 7 in Chapter 2). Specifically, we compared the confidence of those reporting not being supported and not needing support to those not being supported but needing support. Those who said that they were not being supported, but that they needed support, reported significantly higher levels of confidence in the sustainability of remote education (mean rank = 64.22) than those who said they did not need any help (mean rank=52.25) ($p<=0.05$).

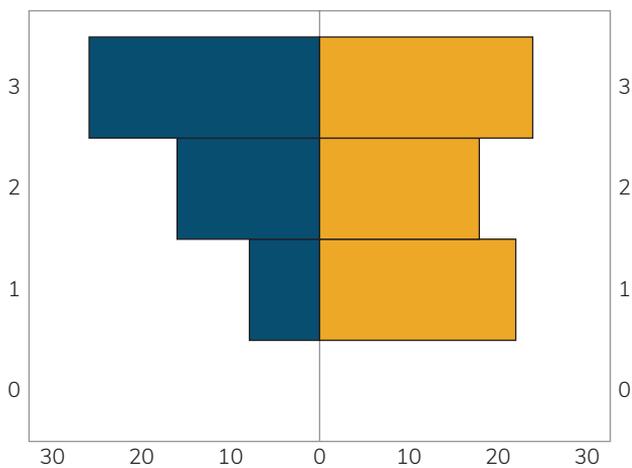


Figure 45: Differences in the reported level of confidence in the sustainability of remote education and reports of not needing support (in blue and to the left, n=64), and not being supported but needing support (in yellow and to the right, n=50)

When comparing the educational stakeholders' level of enjoyment of remote education (Figure 4 in Chapter 2), we found that those who felt supported by their school leadership showed a significantly higher level of enjoyment (mdn=1.95) in comparison to those who said they do not need support (mean rank=52.25) and did not feel supported by school leadership (mdn=1.80) ($p<=0.05$) (see Figure 46).

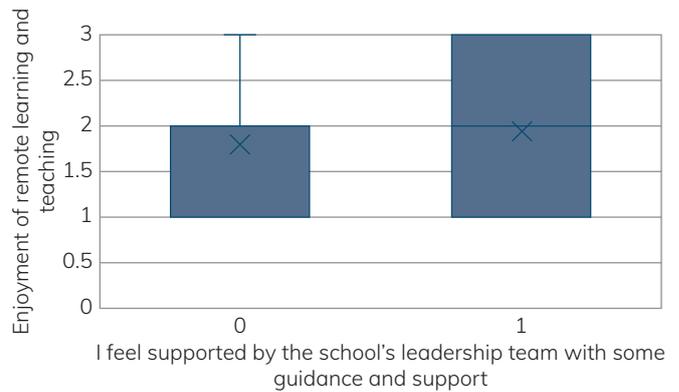


Figure 46: Differences in the reported enjoyment of remote teaching and learning stakeholders reporting being supported by school leaders

Similarly, those feeling supported by school leadership reported a significantly higher level of positive feeling (Figure 3 in Chapter 2) than those reporting not being supported by school leadership ($p<=0.001$) (Figure 47).

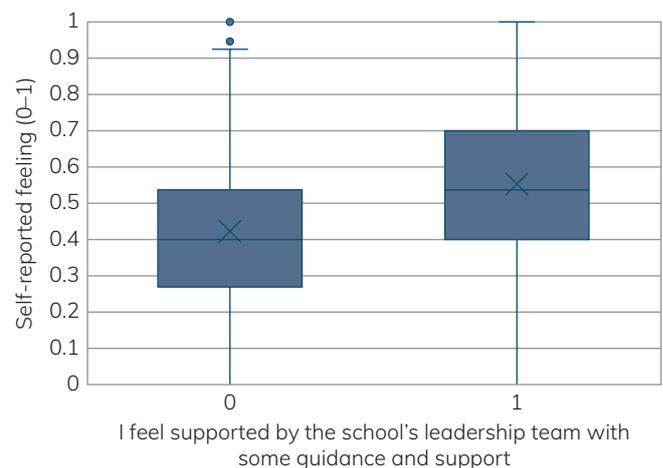


Figure 47: Differences in the reported feelings of positivity and stakeholders reporting being supported by school leadership

The analysis presented in Figures 43 to 47 illustrates the importance of feeling supported in order to result in positive feelings. However, the importance of working together collaboratively and feeling supported is not just something of value to adults; the use of collaborative technologies for students is also known to be of great value for learning.⁴⁸

⁴⁸ https://www.oecd.org/pisa/Combined_Executive_Summaries_PISA_2018.pdf

We wondered, therefore, if there was a relationship between educational stakeholders' who reported feeling supported and those who reported using technology for student collaboration. Figure 48 illustrates the findings from a Mann-Whitney U

test showing significantly higher scores for feeling positive (Figure 3 in Chapter 2) ($p \leq 0.001$) reported by those using technology to support collaboration amongst their students.

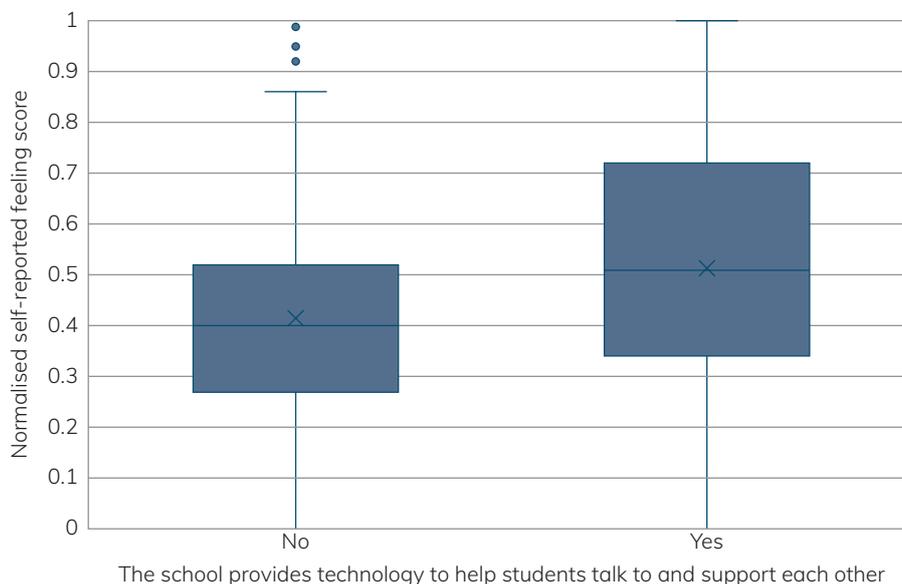


Figure 48: Use of collaborative technology and feelings of positivity amongst educational stakeholders

Within the interview data, we also found reports of headteachers appreciating the pedagogical use of collaborative technologies:

'So that is all going to build up so we'll definitely make more and better use of that [...] and forums with children, debating things and so on and that's something which could move into a home learning situation in normal times they could debate and discuss and go along with a thread ...' [Alison Wyld, headteacher at a state primary school]

One size does not fit all

Regardless of the resources at their disposal, school leaders are on the front line of managing the Covid-19 disruption. Research shows that the implementation of information and communication technology (ICT) in schools is dependent on the headteacher's leadership style and that these style characteristics can be defined through a 'leadership style' framework (Hadjithoma-Garstka, 2011). For example, a headteacher might be characterised as having an 'affiliative' style and a 'people come first' approach. Alternatively, a headteacher may emphasise high standards for performance through a 'pacesetting leadership style'. The responsibility and pressure of Covid-19 on school leaders is evident in the data presented in this report, and preparation and training for school leaders is clearly important to support their handling of such emergencies.

The data we present also evidences great differences between educational leaders, teachers, and parents, all of whom were, and are, required to support student learning to a lesser or greater extent. The leadership styles framework can act as a useful tool for developing leaders and we were curious to explore the way in which we

could provide a framework to guide the way in which future support is provided to educational stakeholders to improve their application of technology in the achievement of learning.

We therefore conducted a cluster analysis on the various data variables that we were able to collect for 1559 of our survey respondents. The data was not adequate for a factor analysis, so we had to use three groups of variables to cluster the survey responses:

1. the use of support systems by respondents;
2. the main educational opportunities respondents identified as arising from the pandemic;
3. the main concerns stakeholders reported facing in the context of school education.

Our analysis of this data resulted in five clusters as illustrated in Figure 49. We named the five clusters after the five elements: Earth Movers (yellow), Aeronauts (light blue), Fire Tamers (red), Water Pilots (dark blue), and Space Seekers (purple) as illustrated in Figure 49 (for further detail of the various variables as distributed among the clusters to Appendix G).

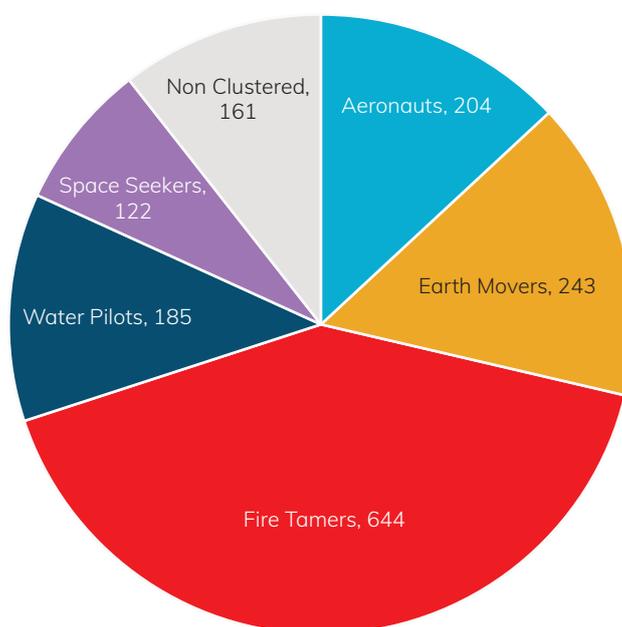


Figure 49: Cluster sizes of 1599 educational stakeholders

Figure 40 illustrates the five clusters of educational stakeholders. Table 1 describes those five clusters in more detail, and is supported by data illustrated in Figures 40 to 42, and Appendix G. In the

companion volume about the recommendations and implications of the evidence presented in this volume, we suggest different support strategies for members of each cluster.



Aeronauts

Aeronauts are ready to fly and relish trying new things and learning. They feel well-supported, optimistic and recognise the value of technology to help learners reach for the sky.



Aeronauts comprise slightly more of **independent school** than **state school** members.



There are slightly more **secondary school** than **primary school** members.



Earth Movers

Earth Movers are focused on the pedagogical grounding. They are keen to develop the infrastructure that supports schools, and are keen to promote well-being and communications.



There are more **independent school** than **state school** stakeholders in this group.



There are more **primary school** than **secondary school** Earth Movers.



Fire Tamers

Fire Tamers are the largest group. They put their energy into tackling the challenges that get in the way of learning. Give them the right tools, support and resources and they will shine brightly!



This group has more **state school** than **independent school** members.



There are more **secondary school** members than **primary school** ones.



Water Pilots

Water Pilots smoothly sail through turbulent waters to steer around obstacles. When they land they are ready to dry off and get tech-savvy.



Water Pilots are mostly from **independent schools**.



More or less evenly spread between **primary** and **secondary schools**.



Space Seekers

Space Seekers are constantly looking for the right learning space for each child. They do their jobs well and once they've mastered the basics, will use technology to deliver effective learning for students.



Slightly more **independent school** stakeholders than **state school**.



Space Seekers are mostly from **primary schools**.

Figure 50: Illustrations of the five clusters

Table 1: Description and the suggested support strategy for various clusters

Cluster	Description
<p>The Aeronauts</p>	<p>The Aeronauts recognise the value of technology, feel well-supported and can communicate well with parents. Confident and optimistic about the use of technology in education, they are eager to make progress and explore new ways of leveraging technology for teaching and learning. This group is aware of the poor infrastructure and technical skill limitations that may restrict their progress and tries to seek ways to overcome these potential stumbling blocks. They are also very concerned about children falling behind. The top three most reported technologies they use include: synchronous live and recorded lessons (comparatively more than other groups), activities for students that they can download, and marking work submitted by students digitally.</p> <p>The group comprises slightly more independent than state school stakeholders, slightly more secondary school than primary school stakeholders, and a fairly even spread of leaders, teachers and parents.</p>
<p>The Earth Movers</p>	<p>The Earth Movers are focused on ensuring all students' basic needs are met, including students with SEN, and are keen to promote well-being and communication. They are less aware of the value of technology, and less knowledgeable about technology than most other groups. They are also the least well-supported and empowered group. While they reported less use of technology in general, the top three technologies they used were: activities for students that they can download, synchronous live and recorded lessons (comparatively less than all other groups except the Fire Tamers), and marking work submitted by students digitally.</p> <p>The group comprises more independent school than state school stakeholders, more primary school than secondary school stakeholders, and an uneven representation of stakeholder groups with slightly fewer teachers and more parents.</p>
<p>The Fire Tamers</p>	<p>The Fire Tamers are the largest group. They are aware of the value of technology, and feel supported, but less so by their leaders. They are not too concerned about children falling behind and are more worried about tackling the challenges of communication with parents, physical health, and confusing messaging from the government. While this group is least confident and optimistic about technology in education, they made use of the greatest variety of technologies and comparatively more use of technology to support social and collaborative needs than any other group.</p> <p>In terms of composition, this group has more state school than independent school stakeholders, more secondary school than primary school stakeholders, and membership is spread across leaders, teachers, and parents.</p>
<p>The Water Pilots</p>	<p>The Water Pilots recognise the value of technology and are keen on opportunities for technical upskilling for teachers. Although they feel well supported by their leaders, they are not too confident and optimistic about technology in education and did not enjoy remote education. Notwithstanding these sentiments, Water Pilots reported the highest use of synchronous live and recorded lessons and used downloadable and live lessons at a very high rate. Their reported use of collaborative and subject-specific technologies was comparatively less than other groups. This group is also the least worried about communication with parents, or infrastructure.</p> <p>They are represented by more independent than state school stakeholders, a rather even distribution of primary and secondary school stakeholders, and more teachers but slightly fewer parents and leaders.</p>

The Space Seekers

The **Space Seekers** value technology for its potential to facilitate communication with parents and bridge students' well-being needs. Like Water Pilots, they reported using comparatively less collaborative and subject-specific technology than others, but used downloadable materials and digital marking more than others. Evidentially, their use of technology was the least diversified. The top three technologies they used include: marking work submitted by students digitally, activities for students that they can download, and synchronous live and recorded lessons, although their reported use of this last technology was less than average. Feeling less supported by their leaders, and worried about confusing messaging from the government, students falling behind and work-life balance, this group is not confident about technology in education.

Space Seekers consist of more primary school than secondary school stakeholders, slightly more independent than state school stakeholders, and are represented by an even spread of leaders, teachers, and parents.

Figure 51 shows the distribution of cluster membership between the different stakeholder types and schools.

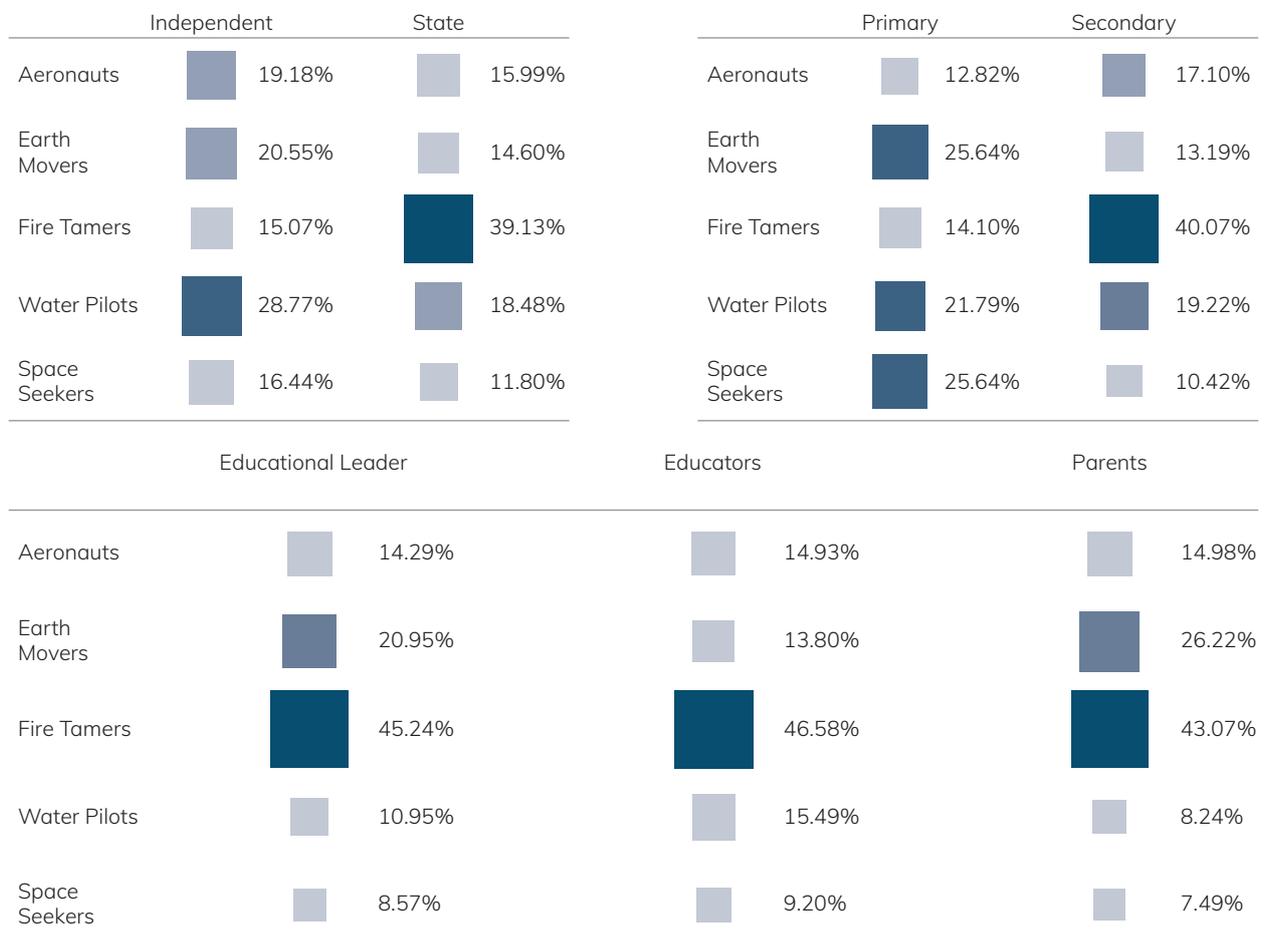


Figure 51: Cluster distribution by roles, school types and school levels

Figure 52 illustrates the different enjoyment levels, optimism, and confidence in the sustainability of remote education amongst the five clusters and shows that these factors were not evenly distributed. Confidence was statistically different across the five clusters ($p < 0.05$).

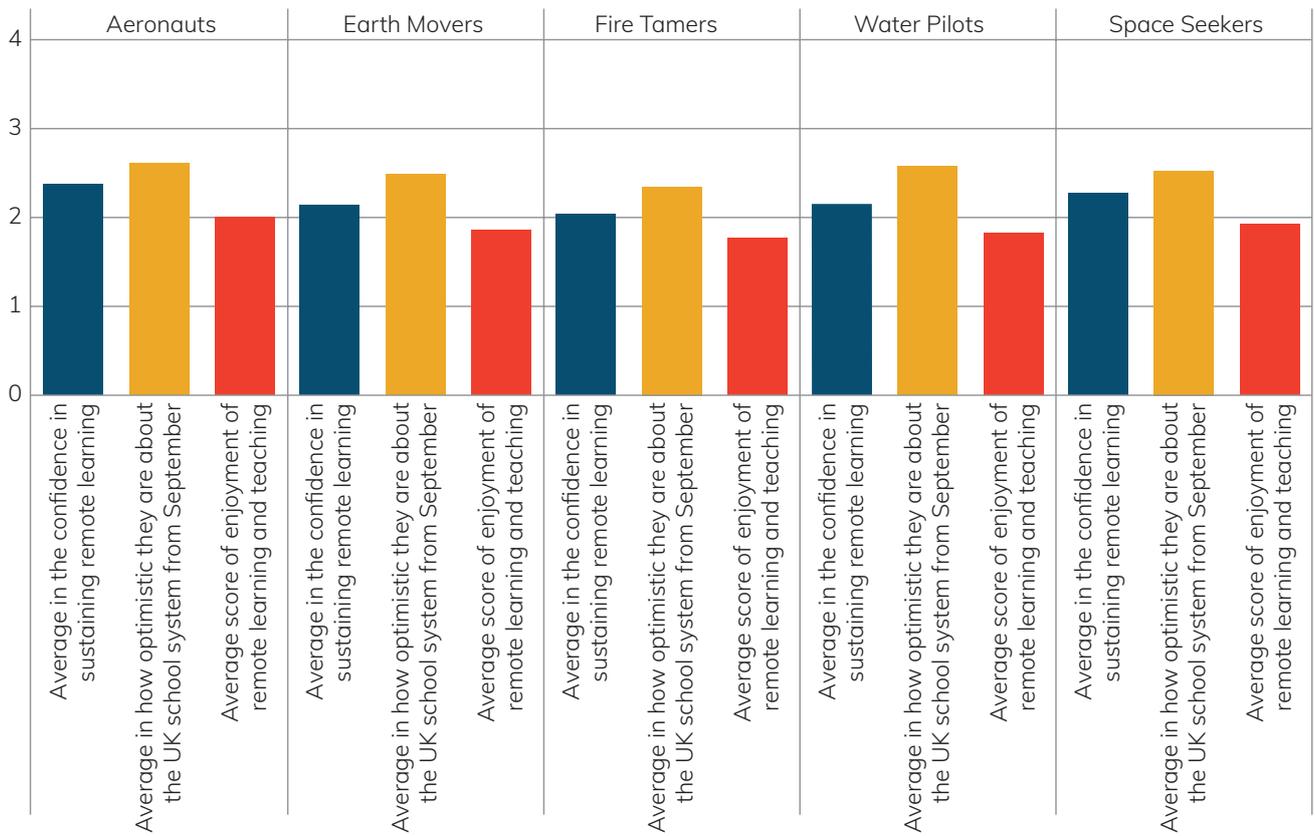


Figure 52: Differences in optimism, confidence and enjoyment between clusters. The confidence level was the only variable showing statistically significant differences

Finally, Figure 53 shows the way that different technologies were used by members of the different clusters.

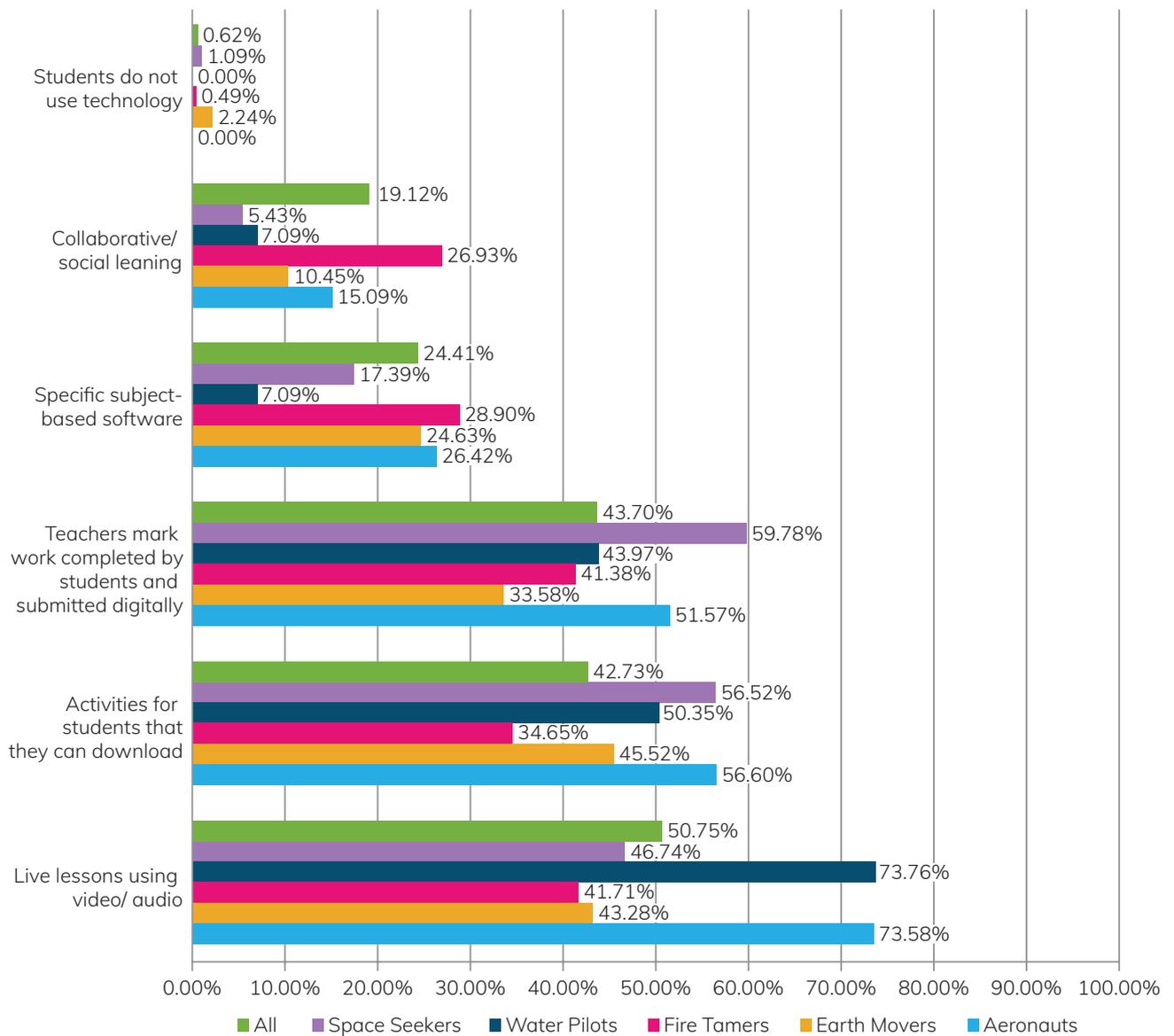


Figure 53: Tech use by clusters, according to 1136 of the clustered respondents

Chapter 6: Methodology

As soon as the pandemic broke and it was clear that its effect on educational ecosystems would be enormous, we began to collect data from as diverse a set of sources as possible, and from a wide range of educational stakeholders to include as many voices, concerns, and opportunities as possible. We wanted qualitative, as well as quantitative, data to enable us to see behind the numbers and develop an understanding of the how and why questions as well as the what was happening data. We adopted a 'T-shaped' strategy for data collection and analysis, which involves casting the data collection net broadly at

the outset to encompass a wide set of research questions and collecting data from smaller cohorts and samples across a broad range of issues. Subsequently, and on the basis of our emerging findings and the findings being reported by others, we were able to focus on a narrower, more targeted subset of research questions and to drill into them more deeply.

Figure 54 illustrates our research strategy. It lists the types of subjects, data sources, research questions and methodologies we used, both as our focus and in a complementary role.

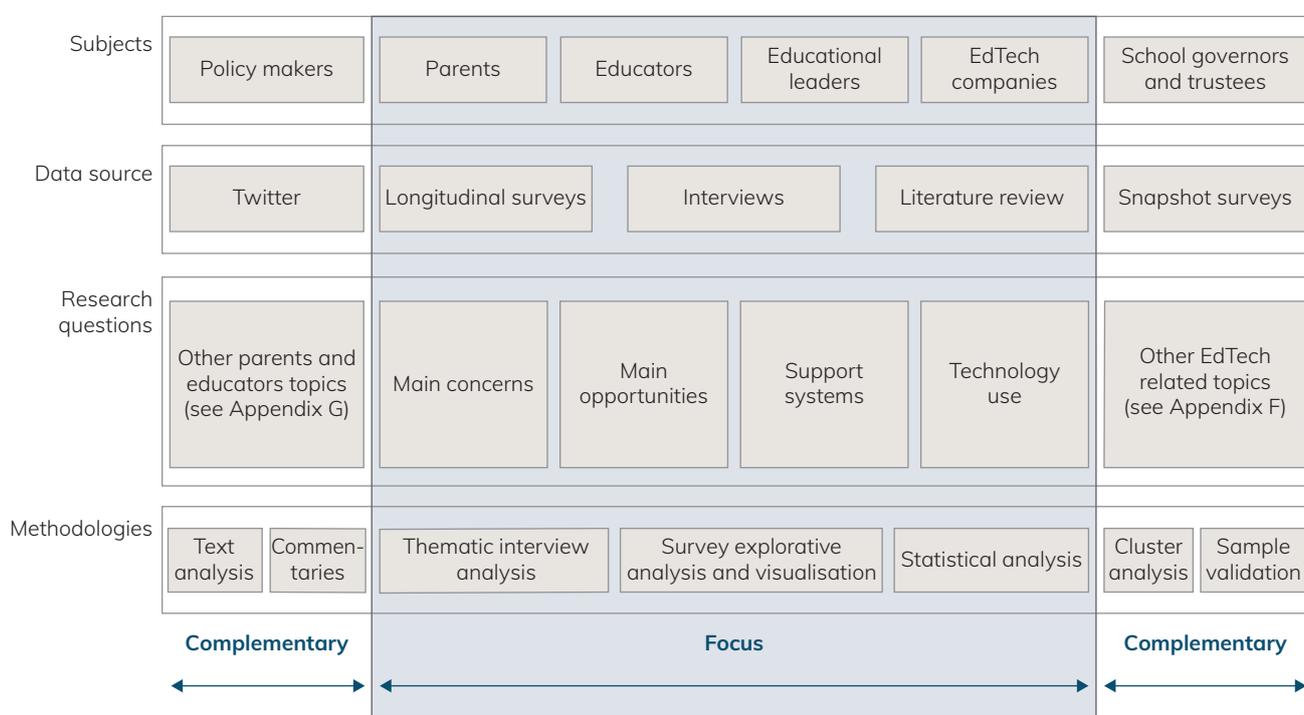


Figure 54: The T-shaped research strategy

Table 2 below details our data sources:

Table 2: List of data sources

Form of Data Collection	Start Date	End Date	Audience	Structure	Number of Valid Respondents
Survey 1	04/04/2020	17/08/2020	Educators, Educational Leaders, Pupils, Parents, Governors, Policy Makers, EdTech Developers	7-Question Survey	760
Survey 2 – Educators / Parents	06/07/2020	03/09/2020	Educators, Educational Leaders, Parents	9-Question Survey	542
Survey 2 – EdTech Developers	18/08/2020	14/10/2020	EdTech Developers	9-Question Survey	40
Interviews – Educators	17/07/2020	07/09/2020	Educators	Semi-structured Interview	46
Interviews – Parents	11/08/2020	07/09/2020	Parents	Semi-structured Interview	31
Teacher Tapp ⁴⁹ (validation sample)	16/09/2020	16/09/2020	Educators	3-Question Survey	6448
Parent Ping ⁵⁰ (validation sample)	16/09/2020	16/09/2020	Parents	3-Question Survey	540
Question for the Day	20/04/2020	12/06/2020	Educators, Educational Leaders, Pupils, Parents, Governors, Policy Makers, EdTech Developers	Single Daily Question	3351 responses as of 3 December 2020
Question for the Week	15/06/2020	Ongoing	Educators, Educational Leaders, Parents, EdTech Developers	Single Weekly Question	1882 responses as of 3 December 2020
Twitter Harvesting	18/08/2020	02/10/2020	By pre-selected tags, language, and geography		
Literature Review					

⁴⁹ <https://teachertapp.co.uk/>

⁵⁰ <https://parentping.co.uk/>

Data collection

We launched our first survey on 4 April 2020, constructed in partnership with Cambridge University Press. Educators, educational leaders, policymakers in education, parents, school governors, pupils, and EdTech developers were invited to participate. This initial survey comprised seven substantive questions, which measured how well the participants believed they and their stakeholders were performing if technology was being used to mitigate the difficulties of lockdown, and for what specifically this technology was being used. The questions remained broadly similar across groups, except in the case of EdTech developers, who were asked whether they were offering a free trial for their product, and what their product aimed to do.

Participants were invited to engage with the first survey through a variety of channels, including Educate Ventures' social media accounts. Cambridge University Press also provided assistance in inviting prospective participants. The final question on that survey invited participants to sign up to daily follow-up questions. The first daily question was circulated on 20 April 2020. The content of these questions was variable, sometimes aiming to measure participants' responses to ongoing issues with education during the lockdown, and, at other times, relating to issues in the news (see details in Appendix E). The questions were identical between participant groups, except for EdTech developers who received a different daily question. Daily questions were discontinued on 12 June 2020 and were replaced by weekly questions starting from 15 June 2020. Weekly questions were sent to all participant groups until 6 July 2020. Following this date, weekly questions were sent to educators, educational leaders, parents and EdTech developers only. Weekly questions to EdTech developers were discontinued after 10 August 2020. Weekly questions are still being sent out to volunteer participants and are an ongoing lens through which we can learn about the manner in which the English education system is, or is not, leveraging the power of technology to support teaching and learning.

On 6 July 2020, a second nine-question survey was launched. The design of this second survey was informed by our analysis of the evidence from the first survey. It was provided to educators, parents, and educational leaders. The nine substantive questions included some that had been asked previously, for example through the question for the day or the question for the week. We stopped collecting responses to the second survey on 3 September 2020 when the new school year started.

A second survey designed solely for EdTech companies was launched on 18 August 2020. This survey asked nine substantive questions, some of which had previously been used in the regular follow-up questions for the day. Data collection for this survey ended on 18 October 2020.

Our main survey respondents

Across the six months of data collection from April to September 2020, a range of educational stakeholders engaged with our data collection. One thousand seven hundred and sixty-six respondents answered our core set of substantive surveys (this number represents the number of respondents after omitting incomplete responses and irrelevant responses due to reasons such as the respondent living outside the UK). In total, 5233 responses were received to our question for the day and question for the week data collection (number recorded on 3 December 2020).

Figure 55 shows how our survey respondents were distributed across different educational roles, school levels, and school types.

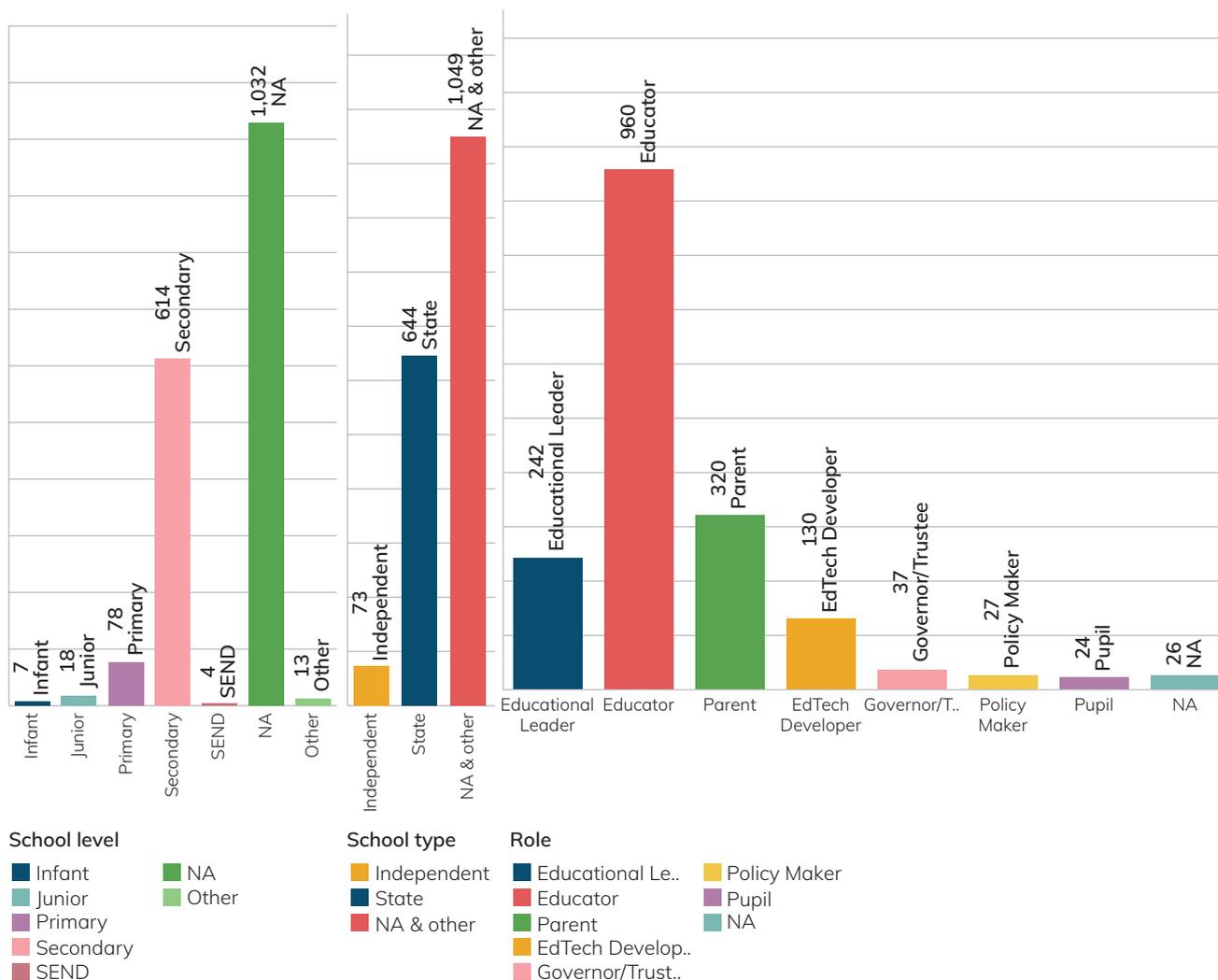


Figure 55: Number of respondents to the multi-question surveys

Figure 56 illustrates the distribution of survey responses over time and illustrates peaks of activity when each of the two surveys were released, or when we reminded potential participants that the survey existed.

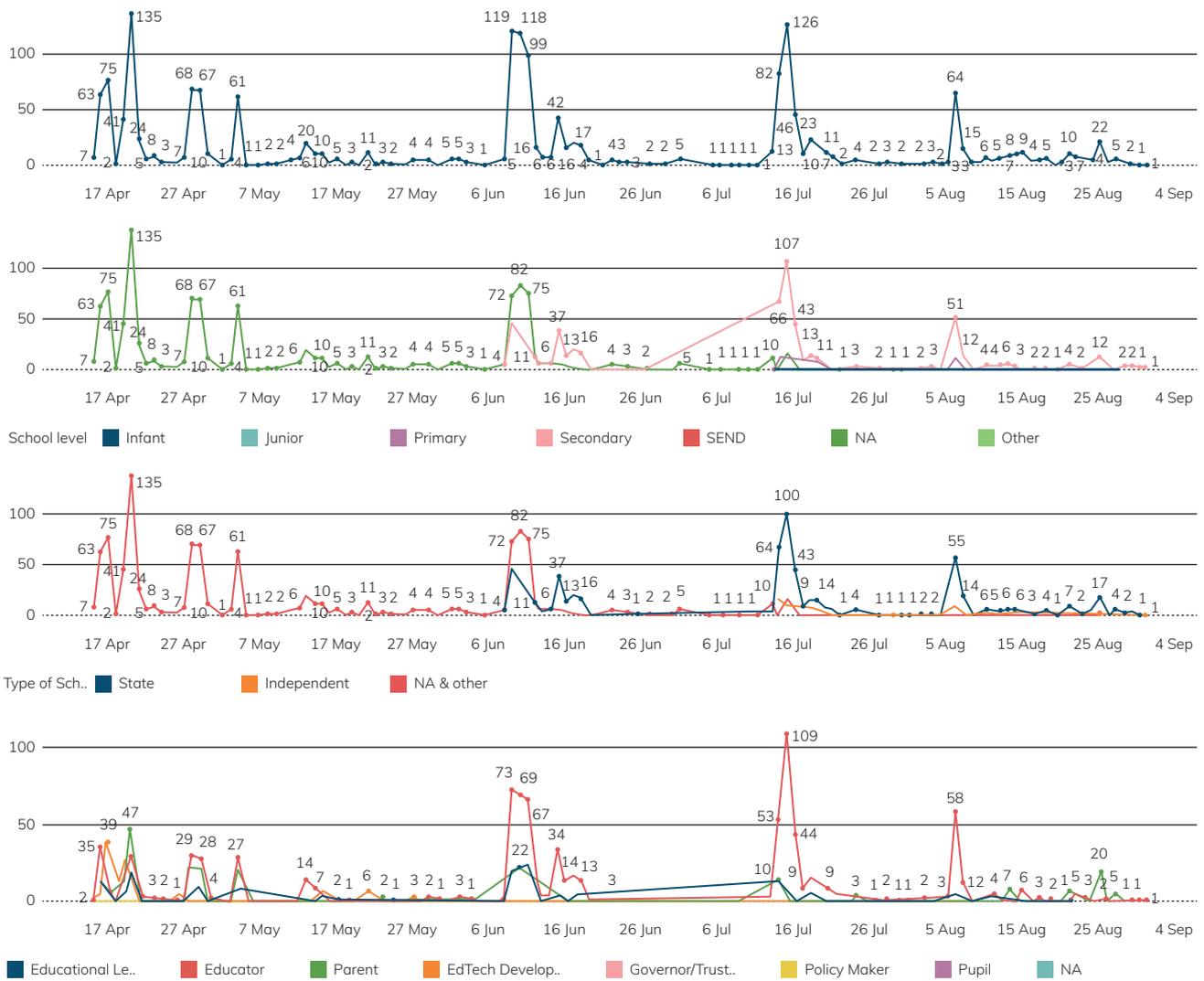


Figure 56: Timeline of respondents of our core set of questions

Interviews data collection

From 17 July to 7 September 2020, we conducted semi-structured interviews with educators and educational leaders. The questions asked during these interviews were structured around the following topics:

- How much technology use had/had not increased;
- The main barriers and challenges that had been faced;
- The support systems that were available;
- The anticipated future changes to the curriculum and teaching;
- Teachers' professional development needs;
- Support for vulnerable and SEN children;
- Leadership during the lockdown.

From 11 August to 7 September 2020, we conducted semi-structured interviews with parents. Parents were asked questions regarding their child/ren's school:

- Before the pandemic;
- The effect of lockdown and having children at home on their job and other responsibilities;

- The type of technologies used by children to learn at home, parents' opinions on the effectiveness of technology in helping children learn, and support provided from school during the lockdown.

The interview questions were informed by the emerging findings from our own surveys and regular questions, as well as the unfolding narrative about the impact of Covid-19 on the education system. The purpose of the interviews was to dig deeper into some of the emerging issues, which was not possible through a survey. The educators who took part in the interviews were mainly teachers and members of their school's Senior Leadership Team. We conducted a total of 46 interviews with educators, including nine interviews with independent school teachers/leaders and 37 state school teachers' leaders. We have also conducted 30 interviews with parents of children in England (plus one in Northern Ireland). The distribution of the geographical locations of interviewees can be seen in the map provided in Figure 57 below.



Figure 57: The geographical locations of our interview participants

Twitter data collection

To overcome some of the biases and limitations (such as the limited number of respondents), we also used the Twitter API to collect tweets from a pre-selected set of tags related to technology and education on two dates: before the opening

of the school year (18 August 2020) and after the opening of the school year (2 October 2020). Tweets were limited to English language and to England. Figure 58 shows the number of tweets we were able to harvest for each of those tags in August (in blue) and October (in orange).

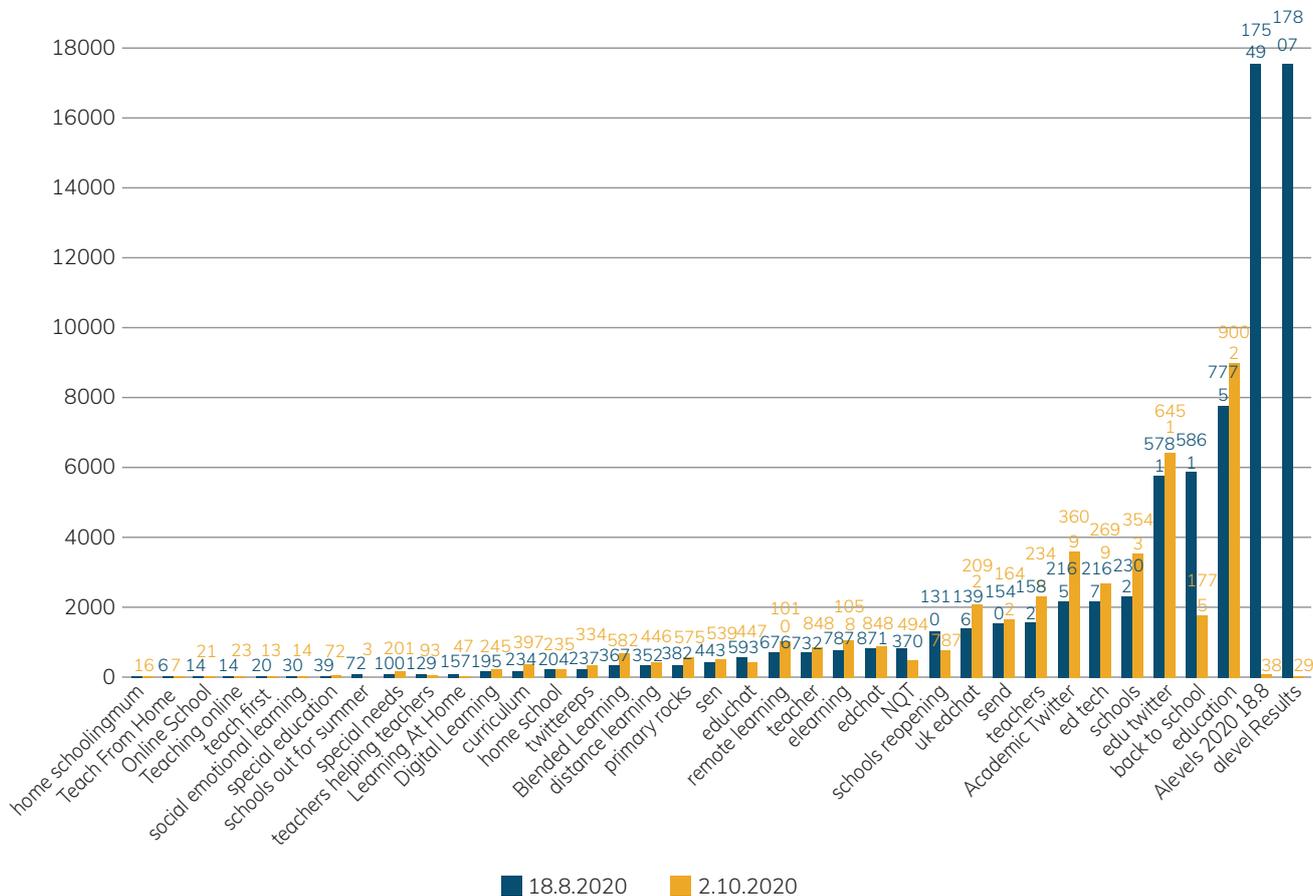


Figure 58: Number of tweets harvested from our pre-made list of hashtags

Collaboration with Teacher Tapp and Parent Ping

The difficulty of gaining access to participants necessitated the use of non-random sampling, which obviously exposes our findings to accessibility bias (bias due to certain groups being unable to access our data collection activities). For example, we had a strong representation of state secondary school stakeholders that might bias our results. Thus, we are not able to rigorously and with statistical precision (for example, use margins of error and confidence intervals) conclude about the whole population of English school stakeholders. To overcome this concern, three questions were composed, which were circulated through a collaboration with Teacher Tapp and Parent Ping.⁵¹ These are two apps that are used by teachers and parents respectively, where participants are provided with daily questions to

answer. Both sets of survey questions were circulated on 16 September 2020, as we sought responses to the questions that had proved interesting in our survey and regular question data collection streams.

To respect the privacy of our survey respondents, we did not collect any identifying details about them. This decision has a limiting effect on our ability to draw conclusions, but we felt it was vital to adhere to this limitation. Other limitations typical to data collected by surveys is the potential for bias in the questions, the possibility that some people will refuse to respond, or simply that respondents were not completely honest in their responses. We are an experienced and highly qualified team of researchers and went to considerable effort to mitigate the impact of these limitations. Nevertheless, it is important to recognise that they exist and inevitably have some impact on the results of the research conducted.

⁵¹ <https://parentping.co.uk/>

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