Learning loss in the Covid-19 pandemic: teachers' views on the nature and extent of loss

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Introduction

In 2020, schools around the world were closed in response to the Covid-19 pandemic. Initially, school closures were considered to be emergency measures to control the spread of the virus, but as the pandemic progressed it became evident that the disruption would be longer lasting. Where possible, teaching moved online to ensure education could continue in some form, prompting rapid changes to teaching and learning. Closures persisted for many weeks, if not months, with closures still in place in some parts of the world in early 2022, almost two years after the start of the pandemic. In some cases, schools reopened but were forced to close again in response to increased infection rates. Once schools were able to reopen, face-to-face teaching could be re-established (for some, if not all, students), but high absence rates and Covid control measures caused continued disruption to 'normal' schooling. Although at the time of writing most schools have reopened, the impacts of the disruption are ongoing and will be felt for some time still to come.

When considering the effects of the disruption to education, a major focus of attention has been "learning loss". In the context of Covid, learning loss is typically understood to be the "gap" between post-pandemic attainment (as observed by teachers or measured by tests) and that which would be expected *had it not been for the pandemic* (e.g., Newton, 2021; Renaissance Learning & the Education Policy Institute, 2021). To that end, it could represent either absolute loss (i.e., students have forgotten things they had previously learned) or relative loss (i.e., less progress has been made than in a typical year). Various attempts have been made to understand and quantify this loss (e.g., Donnelly & Patrinos, 2021; Engzell, Frey & Verhagen, 2021; König & Frey, 2022; Newton, 2021). To measure learning loss, one approach is for students to take progress tests (usually in mathematics and the student's first language) that have been standardised to a pre-pandemic population, such that any discrepancies from expected scores can be assumed to relate to Covid disruption (e.g., Renaissance Learning & the Education Policy Institute, 2021; Rose et al., 2021). Results from these studies have been reasonably

consistent, with most estimates in the range 1–2 months "lost" (see figures collated by Newton, 2021), although with some studies indicating greater losses (e.g., Dorn et al., 2021). Other patterns identified from this approach include greater losses for disadvantaged students, regional variation in losses, and greater impacts on younger children (e.g., Renaissance Learning & the Education Policy Institute, 2021; Twist, Jones & Treleaven, 2022).

Valuable insights into learning loss have been gained from studies using standardised testing, but there are shortcomings to this method. Notably, standardised tests have been developed to measure specific learning areas, so results can only tell us about those areas. Further, the sample of students taking the test may be relatively small, and potentially unrepresentative of the wider population, thus making interpretation of the results challenging. Accordingly, an alternative approach is to survey or interview teachers and other education professionals, to gather expert opinion on what, and how much, has been lost (e.g., Chen et al., 2021; Sharp et al., 2020). Although this is inherently subjective and is also likely to rely on small samples, it can provide a more nuanced view of what may have been lost, and still permits a degree of quantification. That is not to say that such qualitative approaches are better than those based on standardised tests, but by allowing us to look beyond the amount of loss in a restricted range of topics, they can help us to better understand the nature of loss. Indeed, by considering both the amount *and* nature of loss, we should be better placed to understand the impacts on learning and, hopefully, better placed to help students recover what was lost.

In this study, we sought to understand more about learning loss by taking the latter of the approaches described above: we carried out a survey of teachers to gather opinions on the impacts of the pandemic on education. In doing this, we had several key aims. First, we wished to gather views from a diverse range of teaching settings, to uncover the breadth of impacts. Second, we aimed to make no assumptions about the nature or magnitude of any impacts; if respondents felt their students were ahead in some areas but behind in others, or even if they felt there were no impacts, opportunities were provided to report such observations. Finally, we hoped to gather insights that could inform practice.

Methods

Survey design and sample selection

Given the widespread nature of the Covid-19 pandemic, affecting the whole world and all stages of the education system, we wanted the survey to reach teachers from a diverse range of settings: focusing on a single country, one age group, or one school type might miss important aspects of the story. To achieve this, we collaborated with Cambridge CEM. CEM provides baseline and entrance tests to schools around the world, working with both state and independent sectors, and offering tests from early years up to upper secondary level. Hence, by surveying teachers from schools that use CEM tests, we could achieve the diversity of response desired.

We developed a survey to cover four main areas, all focused on teachers' experiences of teaching during the pandemic. The first area was impacts on students; this is the source of the results described in this article. The other major areas were impacts on teachers, experiences of remote teaching, and adaptations to teaching methods. Results from these other areas will be made available at a later date.

The survey primarily consisted of short, closed response questions, such as Likert scales or tick boxes. In most cases, optional free text boxes were provided beneath the main question to allow participants to provide further information. This approach was used to maximise the amount of data generated, by making it simple for participants to answer; any aspects that might take more time were entirely optional. Hence, the main role of the survey was to generate quantitative response data, but with the potential to also generate qualitative data.

Questions were developed over several drafting cycles. Once a final draft was created, questions were entered on to an online survey platform. This draft survey was piloted by two research colleagues with teaching backgrounds and by one current teacher. The pilot aimed to identify any areas where questions were unclear or which would be difficult to answer. Changes were made in response to pilot feedback, leading to the final version being created. This final version was put through Cambridge University Press & Assessment's research ethics approval process and reviewed by the data protection team to ensure all relevant ethical and legal standards were met.

Following the development and approval process, invitations were sent to the named contacts of all schools that use CEM tests or receive CEM marketing. Along with being invited to take the survey themselves, recipients were told they could pass the invitation to colleagues in their school if they wished. This sampling process was designed to generate as large a response as possible to take advantage of the breadth and diversity of schools that work with CEM. We acknowledge, however, that certain school types could end up over- or under-represented; the final sample composition is presented in the following Results section. Invitations to take part were sent on 23 April 2021, and the survey was open to responses for two months.

Data processing and analysis

Once the survey was closed, data was downloaded for analysis offline. Contact details were removed and school names were converted to pseudonyms, so that no individual or school could be identified during analysis. Respondents who had not consented to take part and those who had only answered the earliest contextual questions were removed, leaving data from 404 anonymous respondents.

Before analysing the data, several grouping variables were constructed to allow us to make comparisons of interest. First, to examine geographical variation in responses, respondents were split into either "UK" or "rest of the world" (hereafter, "RoW"). Approximately half of respondents were from the UK, but no other individual country had enough respondents to permit conclusions to be

drawn. Hence, grouping respondents from all other countries permitted some exploration of geographical variation, focusing on how the UK differed from other locations. Next, respondents were split based on school type, with comparisons made between independent and state schools. Only UK schools were considered for this grouping, as almost all international schools were independent. The final grouping was based on the age of pupils; schools were classed as either primary (teach ages up to 11-12), secondary (teach ages from 11-12 and above), or mixed (teach a wider range of age groups). Most were either primary or secondary, so comparisons were made between these two groups. These groupings therefore permitted comparisons that could highlight differences between geographical regions, school types and age groups.

Data analysis focused on descriptive summaries. For closed items, we calculated simple counts and percentages of each response; we did this across all respondents, and separately for the groupings described above. We also read and summarised all free text responses, identifying broad themes discussed. Note that as free text responses were not mandatory, this analysis was carried out to provide context to support interpretation of the closed questions, rather than as a full, formal content analysis.

Results

Sample composition

There were 404 respondents, of whom 199 (49.3 per cent) were from the UK and 205 (50.7 per cent) were from other countries. Outside of the UK, the largest groups of respondents were from China (30; 7.4 per cent), India (30; 7.4 per cent), Italy (13; 3.2 per cent), Malaysia (13; 3.2 per cent), Switzerland (12; 3.0 per cent), UAE (11; 2.7 per cent) and Qatar (10; 2.5 per cent). In total, 38 countries were represented. Respondents came from 198 schools but were unevenly distributed among them; the largest number of respondents from a single school was 23, while 149 schools had only a single respondent. 79.5 per cent of respondents overall said their school did not receive state funding, but this was much greater in RoW than in the UK (92.7 per cent RoW, 65.8 per cent UK). Most respondents were from secondary schools (77.4 per cent overall), with 14.8 per cent from primary schools and 7.8 per cent from schools that fell into neither main category. Hence, the survey achieved the broad diversity of respondents hoped for, but we acknowledge that the sample is skewed towards certain conditions (i.e., UK schools, independent schools and secondary schools).

Considering the respondents themselves, almost all were teachers, with nearly every respondent saying that they were a classroom teacher or someone with oversight of teaching (e.g., school principals); over 96 per cent of respondents had clear teaching roles, with the remaining respondents having roles such as examinations officer or Special Educational Needs (SEN) co-ordinator. A larger-than-expected proportion were highly experienced, with 37.6 per cent having taught 21 years or more, 20.0 per cent having taught 16-20 years, 16.6 per cent having taught 11-15 years, 14.9 per cent having taught 6-10 years, and only 10.9 per cent having taught 5 years or fewer. This was also reflected in seniority of

respondents, with 32.2 per cent having a senior leadership role and 34.7 per cent having another leadership role, with only 28.7 per cent of respondents not having a leadership role. Finally, concerning the subjects taught, 36.4 per cent of respondents said they taught humanities, 30.7 per cent taught sciences, 28.0 per cent taught English, 25.5 per cent taught mathematics, and 12.9 per cent taught creative subjects (note that respondents could select multiple subjects here). Hence, the sample of respondents showed diversity in the level of experience and in the subjects taught.

Estimates of learning loss

Respondents were asked "How far ahead or behind in their curriculum learning do you feel most of your students are at the moment, compared to in a 'typical' year?" Responses are plotted in Figures 1 and 2; the counts and percentages underlying the figures are presented in Appendix Table 1.
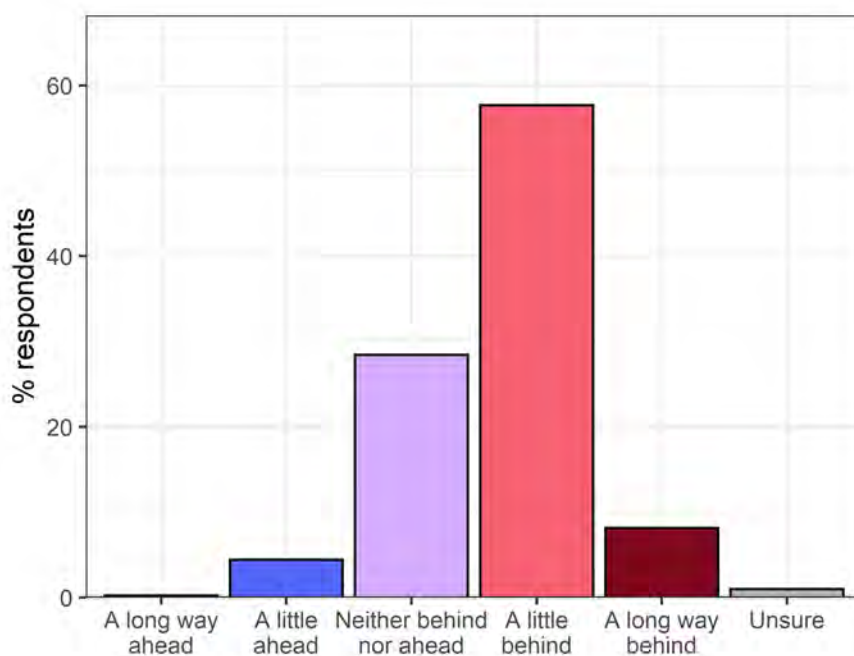

Figure 1: Overall responses to the question "How far ahead or behind in their curriculum learning do you feel most of your students are at the moment, compared to in a 'typical' year?"
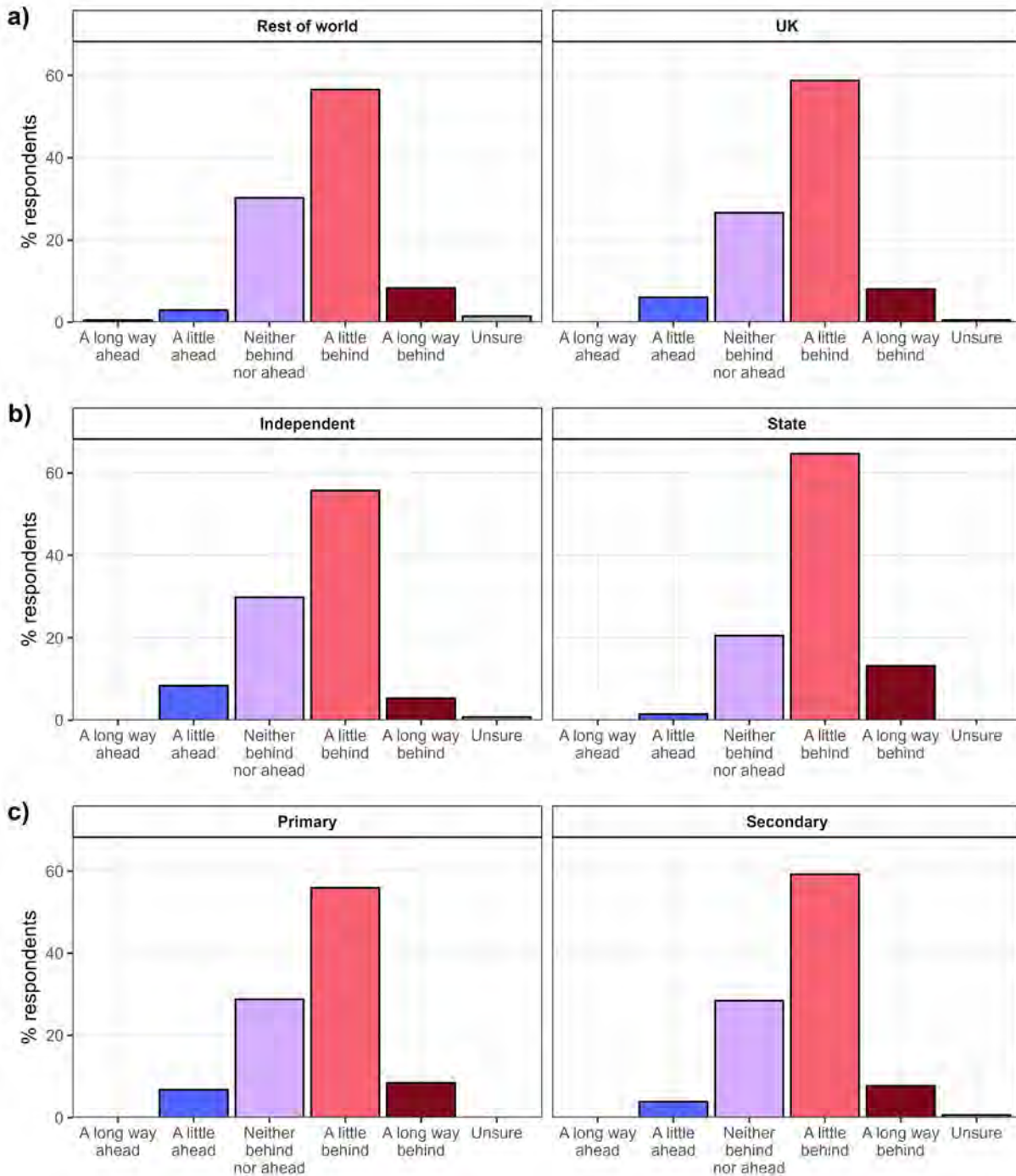
Figure 2: Responses to the question "How far ahead or behind in their curriculum learning do you feel most of your students are at the moment, compared to in a 'typical' year?", broken down into a) RoW and UK respondents, b) independent and state school respondents, and c) primary and secondary school respondents.

Overall, and in all comparison groups, the most common response was that students were "a little behind", with around 58 per cent of respondents overall saying this. Indeed, response patterns across all comparison groups were remarkably stable, with all showing broadly the same thing. One notable difference was, however, that estimates of students "a long way behind" were

greater in state schools (13.2 per cent) than independent schools (5.3 per cent), as were estimates of students "a little behind" (state 64.7 per cent, independent 55.7 per cent). Note also, however, that the results show that a significant minority of respondents thought that their students were neither behind nor ahead, and a small minority thought they were ahead, showing that "loss" was not a universal experience.

To allow for comparisons with other estimates of learning loss, respondents were next asked "As a rough estimate, how far ahead or behind in their curriculum learning do you feel most of your students are at the moment?" For this, responses were analysed separately for those who thought their students were behind[1], and those who thought their students were ahead. Figures 3 and 4 show results for those who felt their students were behind; Appendix Table 2a gives counts and percentages for those who thought their students were behind, and Appendix Table 2b gives figures for those who thought they were ahead. Note that because so few respondents thought their students were ahead, these estimates are not plotted.
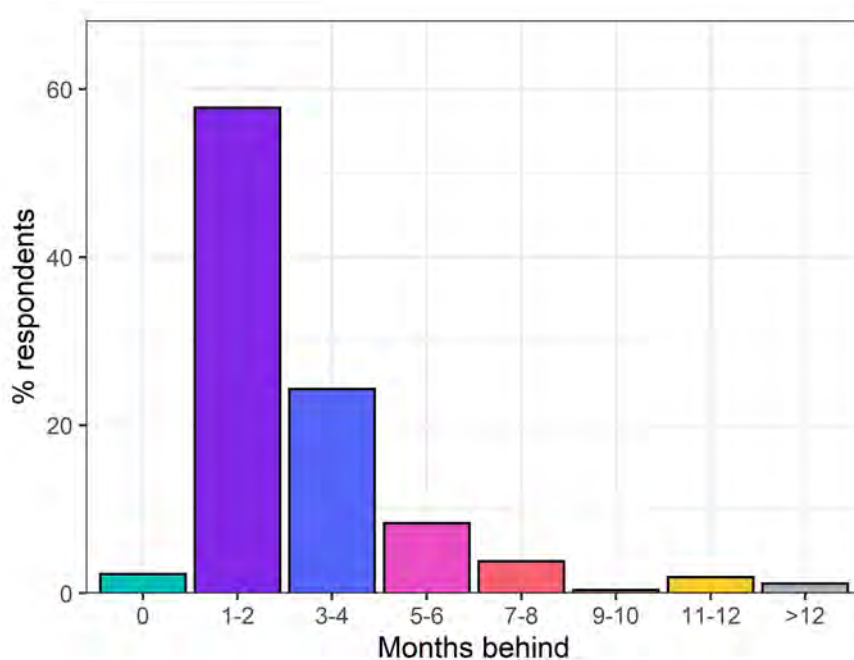

Figure 3: Overall estimates of how many months behind students were (considering only those 263 respondents who felt students were behind).

1 This splitting was carried out using responses to the question analysed in Figures 1 and 2, that is "How far ahead or behind in their curriculum learning do you feel most of your students are at the moment, compared to in a 'typical' year?" Anyone who answered "neither behind nor ahead" was not included in this step of the analysis.
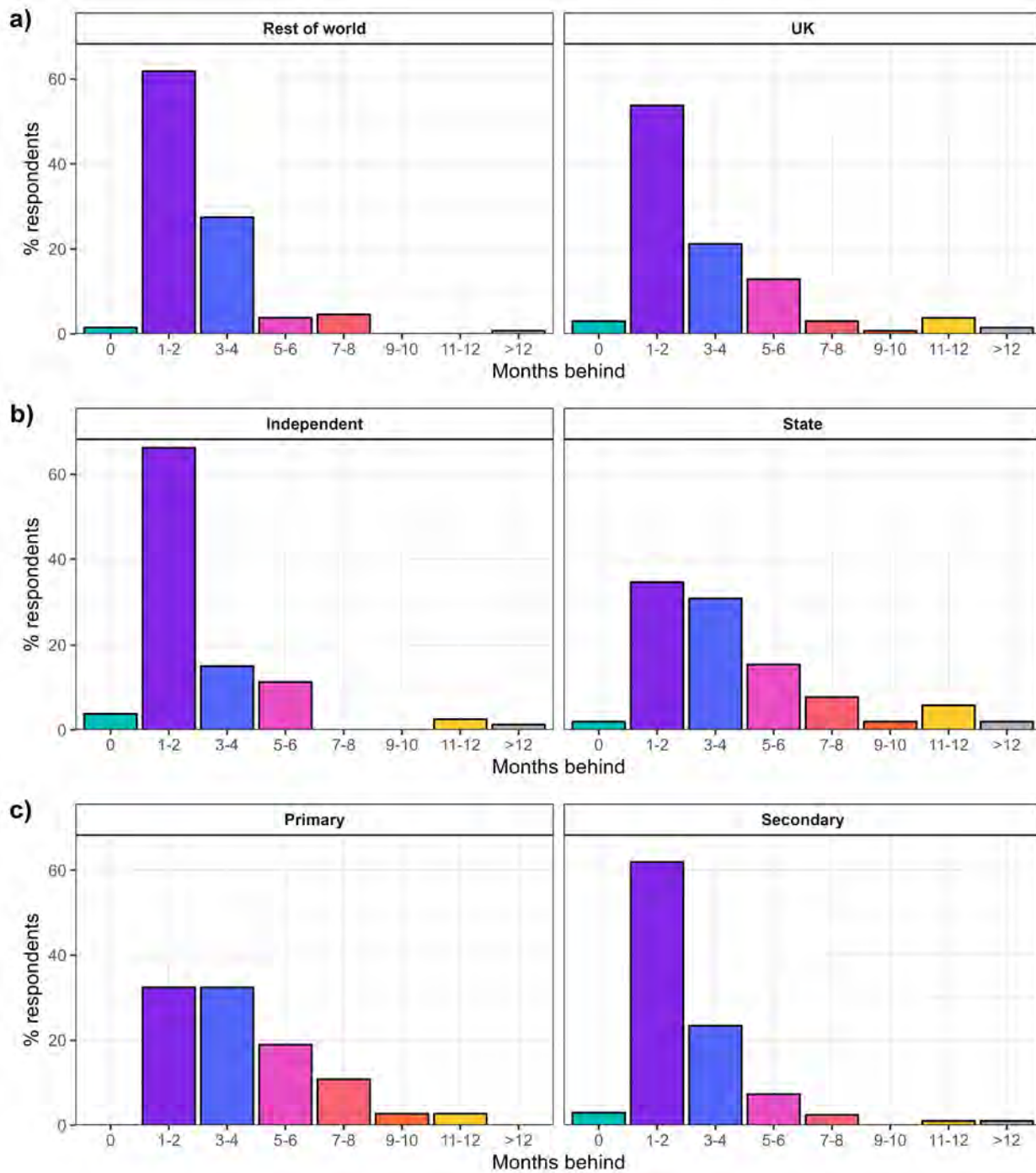
Figure 4: Estimates of how many months behind students were (considering only those respondents who felt students were behind), broken down into a) RoW and UK respondents, b) independent and state school respondents, and c) primary and secondary school respondents.

Considering estimates of students being behind, i.e., "learning loss", the most common response overall, and in most groups, was 1-2 months behind, and the next most common was 3-4 months behind (Figure 3, Table 2a). Note, however, that much larger estimates were not uncommon, with over 10 per cent of respondents overall giving an estimate of 5-6 months or greater. Some interesting contrasts emerged when looking at the comparison groups. First, estimates of

loss were greater in state schools than independent schools, with 66 per cent of independent school respondents saying 1-2 months behind, compared to only 34.6 per cent in state schools; the remaining state school respondents contributed to higher response rates for all larger estimates of loss (e.g., 30.8 per cent for 3-4 months, 15.4 per cent for 5-6 months, 7.7 per cent for 7-8 months, etc.). Similarly, estimates of loss in primary schools were larger than those in secondary schools, with estimates of 1-2 months and 3-4 months behind equally common in primary school respondents, but with 62 per cent of secondary school respondents choosing 1-2 months behind.

Few respondents thought that their students were ahead (Appendix Table 2b). Of those that did think this, the most common response was 1-2 months ahead. The small numbers make it difficult to make robust comparisons between groups, but a notable observation is that only one state school respondent estimated their students to be ahead, compared to eleven independent school respondents.

Following these closed response questions, respondents were asked "If you feel your students are behind or ahead, in which aspects of the subject(s) that you teach are they behind or ahead (e.g., topics, skills)?" and a free text box was provided for answers. This was optional, but 289 responses were given. To provide a visual summary of responses, Figure 5 shows a word cloud of the most commonly used words. This indicates some key themes: skills, more than topics, had been lost, with core skills such as reading, writing, speaking and mathematics hit the hardest. Further, practical skills had been particularly affected by the shift to remote teaching. These were explored further when responses were read in full.
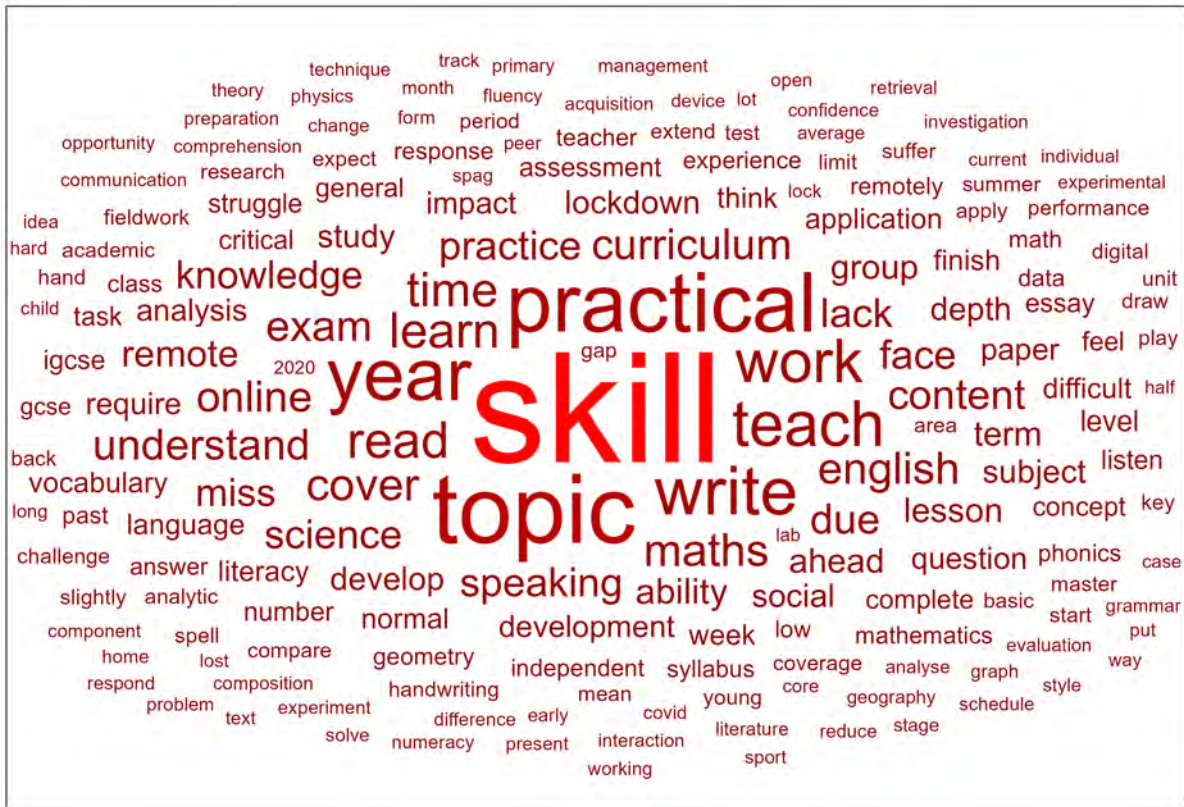
Figure 5: **A word cloud showing the most common words used in responses to the question "If you feel your students are behind or ahead, in which aspects of the subject(s) that you teach are they behind or ahead (e.g., topics, skills)?" Larger words were used more frequently, and smaller words less frequently, with the font size proportional to the number of times the words were used.**

Many responses were short, simply listing the areas where students were behind. For example, responses included "spelling, reading and maths", "speaking and writing skills", "writing and mathematics", "literacy and numeracy", "writing, reading, speaking and listening skills", and "handwriting has deteriorated [and] ability to write extended responses". These responses reflect a common theme: many of the areas lost were fundamental skills, particularly relating to maths and English. A number of respondents attributed this loss to remote learning, with comments like "their listening skills have suffered on account of the online teaching", and "students lack their calculating and critical thinking skills as most of the students either don't respond during the online sessions or they use digital devices to do the calculations, also someone might be helping them to answer the questions." Hence in spite of, or even because of, remote learning, many teachers felt fundamental skills had fallen behind.

Aside from literacy and numeracy, a commonly mentioned area of loss was practical skills, as practical sessions were difficult, if not impossible, to carry out remotely. Some comments mentioned practical skills in general, such as "behind with regards to practical skills", but several specific areas were also described. As may be expected, science was often mentioned, with comments such as "lab practical skills – experimental procedures, precautions, manipulating and interpreting data", and "our students have undertaken no proper practicals in science." A range of other subject areas were also mentioned, including physical education ("our younger students … have missed the summer sports, so cricket,

athletics and tennis"), art ("where they drag a bit is with the practical skills – ability to sketch quick and to sketch right, ability to work with dynamic compositions"), geography ("there has been no fieldwork, so the skills component has been seriously weakened"), music ("practical music skills – playing and composing"), and drama ("we haven't covered anything that has to do with the stage and the theatre space"). Loss, therefore, was not limited to areas easily monitored with standardised tests.

A further key area of loss was that of general study skills, of the type that may not be explicitly taught, but which are picked up from general schoolwork. Specific examples included "day-to-day management of workload/school habits", "acquisition of study habits", "soft skills and collaborative skills", "they definitely lack academic maturity", "social skills, communication and interaction", and "social skills and self regulation". One respondent noted that the loss of general skills could be particularly problematic for certain year groups: "Our year 7 ... were remote for half of their year 6 and now are just back in school after 6 months remote in year 7. Their skills have really been impacted as has their loss of opportunity to 'grow' as secondary students or to have the leadership opportunities that would have come from being the top year in Primary." Hence, the range of skills considered "lost" was not limited to those explicitly taught or practised, but also included things that students gain simply from being at school.

A small number of respondents described areas where students were ahead. These most often related to areas where remote learning permitted extra focus or encouraged development of particular skills. Comments along these lines included "remote learning ... allowed for more in-depth study of text", "definitely ahead in IT skills such as presenting and displaying data", and "they have increased their understanding of digital media such as photography and digital editing". Indeed, one respondent described opportunities presented by remote learning: "they have deeper understanding. Working remotely, we have been able to run seminar style lessons ... This has led to much deeper understanding of content and concepts." Hence, although the majority of respondents described areas of loss, there were some areas where extra progress was possible in some cases.

The final emerging theme in free text comments related to variability in loss, with a reasonably large number of respondents describing variable impacts and suggesting reasons for this. Age appeared to have an impact, emphasised by comments such as "younger students ... have been more adversely affected", and "the difference is most notable in the younger children who have had a significant proportion of their time in school disrupted." Student ability also appeared to play an important role, with comments such as "higher ability students are slightly ahead. Lower ability students are behind on exam technique, in-depth analysis and retrieval practice", "in general, lower attaining students found remote learning more challenging and some disengaged completely," and "those that need the most support with working in normal times have suffered the most." Indeed, one comment noted substantial individual-level variability: "every case is different – and some have thrived being left alone with more time, others have struggled with the lack of structure of remote learning". It appears, then, that learning loss was highly variable within and between groups.

This theme of variability of loss was picked up in the next survey question, which asked respondents "How much has the educational gap between your most able and your least able students changed since the start of the pandemic?" Results are presented in Figures 6 and 7, and in Appendix Table 3. The biggest response category overall was that gaps had "increased a little" (42.8 per cent), followed by gaps having "increased a lot" (25.2 per cent), meaning that 68 per cent of respondents thought gaps had increased. Note, however, that a significant minority (9.4 per cent overall) thought that gaps had actually decreased.

Although "increased a little" was the biggest category in each comparison group, some differences were still evident: estimates of increased gaps (i.e., "a little" and "a lot" combined) were more common in the UK (76.4 per cent) than in RoW (60.0 per cent), more common in state schools (86.8 per cent) than in independent schools (71.0 per cent), and more common in secondary schools (72.1 per cent) than in primary schools (59.3 per cent). Perhaps the most notable difference was between state schools and independent schools: 36.8 per cent of respondents in state schools felt that gaps had "increased a lot", compared to 17.6 per cent in independent schools. Although there was no specific free text question about the size of educational gaps, responses to other questions (not analysed in detail here) described variability in access to technology, parental support, and engagement, as well as effects of ability level. Therefore, a range of factors could affect the extent of learning loss and, within a group of students facing varying circumstances, influence the resulting educational gaps.

Figure 6: **Overall responses to the question "How much has the educational gap between your most able and your least able students changed since the start of the pandemic?"**
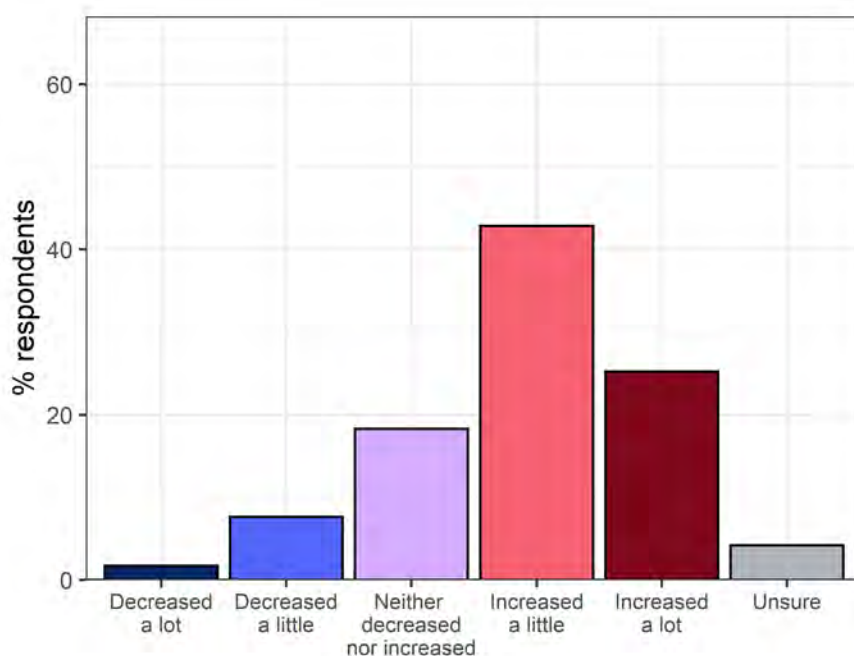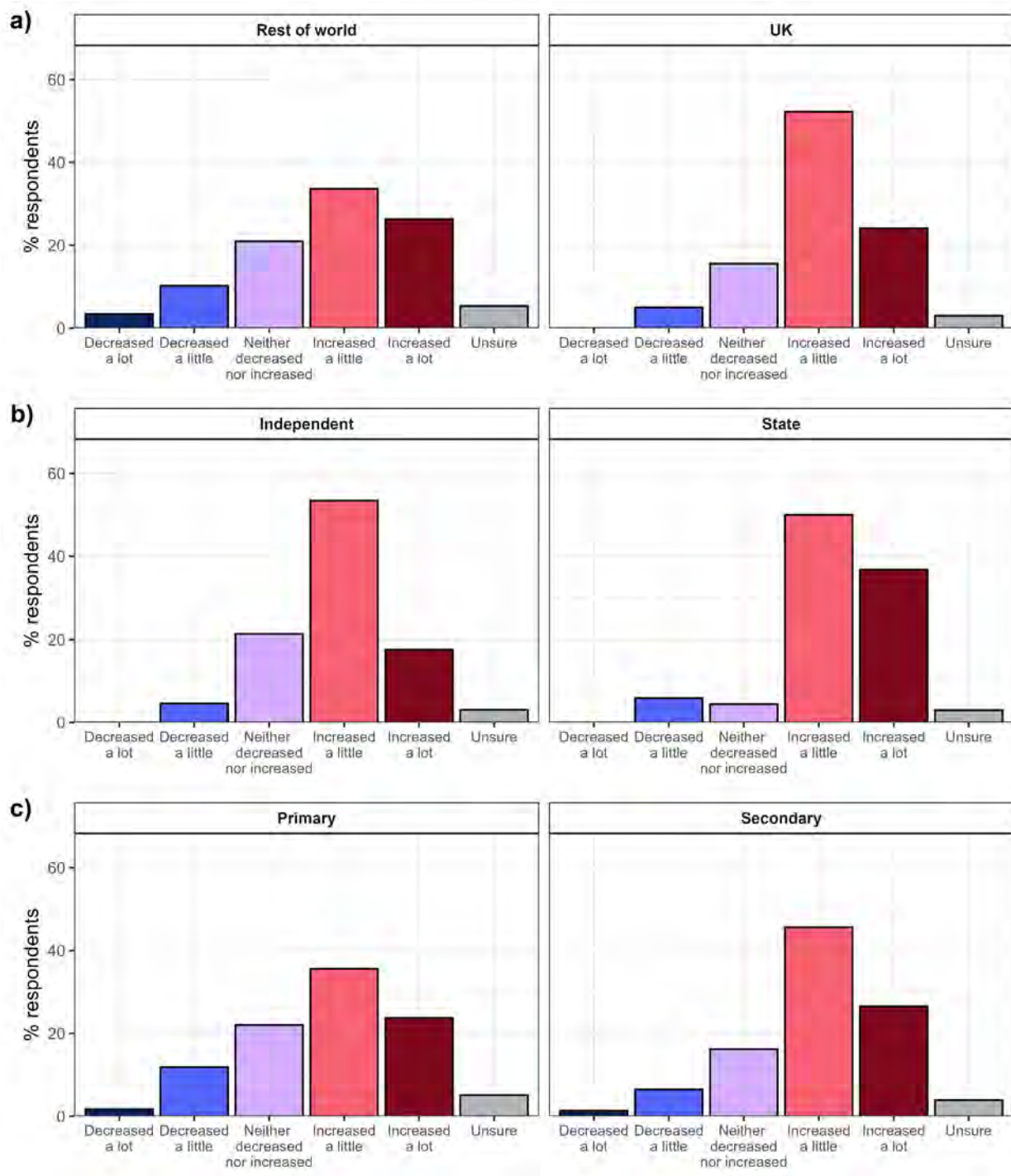
Figure 7: Responses to the question "How much has the educational gap between your most able and your least able students changed since the start of the pandemic?" broken down into a) RoW and UK respondents, b) independent and state school respondents, and c) primary and secondary school respondents.

Discussion

Learning loss is frequently discussed as a major consequence of the disruption to education during the Covid-19 pandemic. Here, responses to a survey sent to teachers after one year of teaching through the pandemic have helped us to understand more about how much, and what, was "lost".

Before exploring the results in detail, it is worth considering the limitations of the study. Perhaps the largest limitation is that the sample of respondents is relatively small. Although over 400 responses were received, spread across 198 schools, this is a tiny fraction of the number of teachers and schools in the world. Further, the sample composition is not representative of the actual composition of schools and teachers, either within the UK or the wider world. This means that the findings might over-emphasise particular experiences and under-emphasise others. The subgroup comparisons allow at least some of the effects of this to be explored, as the influence of key sources of variation could be examined, but even these comparisons cannot claim to be fully representative of the groupings considered. Hence, while the results can tell us valuable things about teachers' experiences of learning loss during the Covid-19 pandemic, we cannot tell the extent to which they capture the full range of views. Nevertheless, the sample is large enough, and responses detailed enough, that we can still draw conclusions and make inferences from the results.

A main finding worth emphasising is that a majority of teachers did feel that their students were, on average, behind where they would be in a typical year. That is, the phenomenon of "learning loss" does seem to have occurred. However, a large minority of respondents did not observe an overall loss, and a small minority found that some students were ahead compared to a typical year. Therefore, these results support the idea that the disruption to education caused students to fall behind, but it does not appear to be a truly universal experience, despite the global nature of the pandemic.

Intriguingly, estimates of the amount of learning lost were similar to those calculated via more quantitative studies, which have typically indicated loss of 1-2 months, albeit with much larger estimates in some cases. The most common estimate here was 1-2 months behind, but 3-4 months behind was also a common response. This suggests that teachers' perceptions of lost progress are fairly accurate, and in turn provides a degree of support for findings from quantitative studies (e.g., those reported by Newton, 2021). It is notable, however, that some much larger estimates were made, with over 10 per cent of those respondents who thought their students were behind estimating 5 months or greater. Bearing in mind that these were estimates of *average* loss, it raises concerns that some groups may have been very strongly affected. Most estimates were, however, somewhat reassuring: a "loss" of 1-2 months or even 3-4 months is less than the length of the disruption, which suggests that teachers, schools, and whole education systems, managed to counteract at least some of the possible negative impacts.

The findings discussed thus far point to what is, perhaps, a greater concern than the presence of "loss" itself. That is, the impacts of the disruption were variable

and unevenly distributed. As noted above, loss was not universally experienced, and even among those who were considered to be behind, the extent of loss varied. Free text comments suggested that there could be strongly varying impacts within the same class or school, with individual family circumstances and student personalities influencing outcomes. This variability was further emphasised by comparisons between subgroups of respondents, which indicated some structural aspects to learning loss. That is, students in state schools and younger students appeared to have experienced greater impacts than those in independent schools and older students respectively. Similar patterns have been noted elsewhere (e.g., Howard, Khan & Lockyer, 2021; Major, Eyles & Machin, 2020; Open Data Institute, 2020), again reinforcing the emerging picture of important variability in loss.

Our study also allowed us to consider the nature of what had been lost. Other attempts to examine loss often focus on standardised tests of numeracy and language skills, so can only really draw conclusions about these areas. Here, by asking teachers about what they felt had been lost (or, indeed, gained), we were able to look beyond these core areas. Many comments reflected on the loss of fundamental skills, such as writing and reading. Although remote learning would have clearly included the use of such skills, they appear not to have developed in the same way during that period. Some skills could not be covered remotely, notably practical science, but also practical aspects of sports, music and drama; again, these were all mentioned as areas where loss had occurred. Further, comments discussed the loss of more general skills, such as communication, workload management and social skills; such skills are not always formally taught, but develop as part of school life. Therefore, results indicate that "learning loss" appears to not be the uniform loss of all learning, but instead reflects the loss, or lack of development, of particular skills.

The above discussion of the nature of learning loss has important implications not just for the way we understand it, but also how we respond to it. If learning loss was uniform in both extent and nature, catching up could be achieved simply by providing extra hours of teaching, covering what was missed. However, the variability means that some students will need much more support, while others, who may have progressed *more* than in a normal year, may not need any support. The structural elements of loss identified, including variation between age groups and school types, also introduce an equality angle to the discussion: whole groups of students have been affected more than others, meaning that existing inequalities have widened, and bringing into question whether certain groups need focused support. Moreover, it seems feasible to provide specific catch-up time on some areas (e.g., numeracy or practical science skills), but other areas of loss may be better served by supporting the transition back to normal schooling (e.g., general study and social skills). Therefore, responses to learning loss must consider who needs support, what needs to be covered, and whether the loss would be recovered naturally over time anyway. Despite the well-intentioned focus on rapidly responding to impacts of the pandemic, responses should be carefully considered to ensure efficient and equitable use of catch-up resources.

Indeed, one author has characterised the challenges of responding to learning loss as a "trap", in which a strong focus on quantifying loss, a lack of acknowledgement of variability, and a focus on numeracy and language all lead to inefficient or ineffective responses (Zhao, 2021). A particular risk the author raises is that focus on "catching up" in numeracy and literacy draws resources away from other areas. Instead, the author argues that responses should use teachers' professional judgement to identify the extent of support required, and consider a wide range of educational outcomes. Moreover, the author points out that there may be opportunities: the increased engagement of families, increased use of independent learning, and innovations introduced by remote learning can all be developed in the post-pandemic world. Other authors have made similar claims: by developing effective catch-up approaches there may be an opportunity to "build back better" (Kaffenberger, 2021). To "build back better" and avoid "traps", it is important to consider what has been lost, by whom, and what will best help them to catch up.

The research presented here does not challenge the narrative of learning loss: a majority of survey respondents from around the world, and from different school types, reported that their students were behind where they would be in a normal year. The estimates of loss experienced are similar to those from other studies using entirely different methods, adding credence to the findings here. However, the findings discussed above help to qualify what loss means: it is variable within and between groups, with some students even showing *extra* progress, and it seems to have impacted development of skills more than coverage of curriculum content. Efforts to make up for learning loss are well intentioned and important, especially given some of the large estimates of loss reported here and the likely impacts on educational equality. But the findings here caution us not to look for simple, large-scale fixes, which could increase pressure on teachers and students, and which may not be applied efficiently. Instead, consideration of individual needs and circumstances, use of teachers' professional judgement – and even consideration of new opportunities and what may have been gained – could ensure that the right kind of support is provided to those who need it, in turn helping to mitigate some of the longer-term impacts of the disruption.

Acknowledgements

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Appendix

This appendix contains tables that report the underlying counts and percentages used to create the figures in the main article.

Table 1: Raw counts and percentages for responses to the question "How far ahead or behind in their curriculum learning do you feel most of your students are at the moment, compared to in a 'typical' year?"

		A long way ahead	A little ahead	Neither behind nor ahead	A little behind	A long way behind	Unsure
Overall	N	1	18	115	233	33	4
	%	0.2 %	4.5 %	28.5 %	57.7 %	8.2 %	1.0 %
RoW	N	1	6	62	116	17	3
	%	0.5 %	2.9 %	30.2 %	56.6 %	8.3 %	1.5 %
UK	N	0	12	53	117	16	1
	%	0.0 %	6.0 %	26.6 %	58.8 %	8.0 %	0.5 %
Independent	N	0	11	39	73	7	1
	%	0.0 %	8.4 %	29.8 %	55.7 %	5.3 %	0.8 %
State	N	0	1	14	44	9	0
	%	0.0 %	1.5 %	20.6 %	64.7 %	13.2 %	0.0 %
Primary	N	0	4	17	33	5	0
	%	0.0 %	6.8 %	28.8 %	55.9 %	8.5 %	0.0 %
Secondary	N	0	12	88	183	24	2
	%	0.0 %	3.9 %	28.5 %	59.2 %	7.8 %	0.6 %

Table 2: Raw counts and percentages for estimates of how far behind or ahead students were, for a) respondents who thought their students were ahead, and b) respondents who thought their students were behind.

a) Responses to "I estimate that my students were behind by…"

		0 months	1-2 months	3-4 months	5-6 months	7-8 months	9-10 months	11-12 months	Over 12 months
Overall	N	6	152	64	22	10	1	5	3
	%	2.3 %	57.8 %	24.3 %	8.4 %	3.8 %	0.4 %	1.9 %	1.1 %
RoW	N	2	81	36	5	6	0	0	1
	%	1.5 %	61.8 %	27.5 %	3.8 %	4.6 %	0.0 %	0.0 %	0.8 %
UK	N	4	71	28	17	4	1	5	2
	%	3.0 %	53.8 %	21.2 %	12.9 %	3.0 %	0.8 %	3.8 %	1.5 %
Independent	N	3	53	12	9	0	0	2	1
	%	3.8 %	66.2 %	15.0 %	11.2 %	0.0 %	0.0 %	2.5 %	1.3 %
State	N	1	18	16	8	4	1	3	1
	%	1.9 %	34.6 %	30.8 %	15.4 %	7.7 %	1.9 %	5.8 %	1.9 %
Primary	N	0	12	12	7	4	1	1	0
	%	0.0 %	32.4 %	32.4 %	18.9 %	10.8 %	2.7 %	2.7 %	0.0 %
Secondary	N	6	127	48	15	5	0	2	2
	%	2.9 %	62.0 %	23.4 %	7.3 %	2.4 %	0.0 %	1.0 %	1.0 %

b) Responses to "I estimate that my students were ahead by…"

		0 months	1-2 months	3-4 months
Overall	N	2	14	3
	%	10.5 %	73.7 %	15.8 %
RoW	N	2	4	1
	%	28.6 %	57.1 %	14.3 %
UK	N	0	10	2
	%	0.0 %	83.3 %	16.7 %
Independent	N	0	9	2
	%	0.0 %	81.8 %	18.2 %
State	N	0	1	0
	%	0.0 %	100.0 %	0.0 %
Primary	N	0	3	1
	%	0.0 %	75.0 %	25.0 %
Secondary	N	2	8	2
	%	16.7 %	66.7 %	16.7 %

Table 3: Raw counts and percentages for responses to the question "how much has the educational gap between your most able and your least able students changed since the start of the pandemic?"

		Decreased a lot	Decreased a little	Neither	Increased a little	Increased a lot	Unsure
Overall	N	7	31	74	173	102	17
	%	1.7 %	7.7 %	18.3 %	42.8 %	25.2 %	4.2 %
RoW	N	7	21	43	69	54	11
	%	3.4 %	10.2 %	21.0 %	33.7 %	26.3 %	5.4 %
UK	N	0	10	31	104	48	6
	%	0.0 %	5.0 %	15.6 %	52.3 %	24.1 %	3.0 %
Independent	N	0	6	28	70	23	4
	%	0.0 %	4.6 %	21.4 %	53.4 %	17.6 %	3.1 %
State	N	0	4	3	34	25	2
	%	0.0 %	5.9 %	4.4 %	50.0 %	36.8 %	2.9 %
Primary	N	1	7	13	21	14	3
	%	1.7 %	11.9 %	22.0 %	35.6 %	23.7 %	5.1 %
Secondary	N	4	20	50	141	82	12
	%	1.3 %	6.5 %	16.2 %	45.6 %	26.5 %	3.9 %