

Article

Remote schooling through the coronavirus (COVID-19) pandemic, England: April 2020 to June 2021

An analysis of remote learning over the coronavirus (COVID-19) pandemic period.

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1 . Main points

- Remote learning was, at best, a partial substitute for in-class teaching during the coronavirus (COVID-19) pandemic, as pupils covered substantially less material when working from home than their peers in the classroom, according to teacher assessments.
- The difference between the materials covered by remote and in-class pupils was larger for primary schools than for secondary schools; primary school pupils learning remotely covered a much smaller fraction of the learning materials than their in-class peers.
- The proportion of instruction dependent on parents was much higher for primary schools than for secondary schools, and much higher for pupils in Key Stage 1 (aged 5 to 7 years) than pupils in Key Stage 2 (aged 7 to 11 years).
- The difference between remote and in-class learning was particularly acute at schools with a higher proportion of pupils eligible for free school meals; remote learners at these schools covered a smaller fraction of in-class learning materials than remote learners at schools with a lower proportion of pupils eligible for free school meals
- Teachers at schools with lower proportions of pupils eligible for free school meals also reported pupils' learning being less dependent on parental instruction than teachers at schools with a higher proportion of pupils eligible for free school meals.
- Remote learning has been less effective for the teaching of some subjects than for others; teachers reported a larger reduction in materials covered by remote learners relative to in-school learners for arts, including design and technology than for other subjects.
- Data show little evidence of large differences in materials covered or dependence on parental instruction in different English regions.

2 . Adjusting education output for remote learning

The coronavirus (COVID-19) pandemic has had a profound impact on pupils, teachers and schools, as well as on the measurement of education output in the National Accounts. As set out in [Coronavirus and the impact on measures of UK government education output](#), we modified our usual methods of measurement during the pandemic. We measured both the differences in the learning materials covered by remote learners compared with in-school learners and the dependence of the learning received by remote learners on the input of parents or guardians. This enabled us to account for differences in the quantity of education delivered to remote learners relative to in-school learners and discount for unpaid parental input which falls outside of the national accounts production boundary.

These two factors are combined to produce a full-time equivalent (FTE) “discount” factor, which is applied to remote learners, enabling us to count remote learners who might otherwise be excluded under our usual methods. The data we use to calculate this discount factor are collected by Teacher Tapp, who survey teachers across England.

In response to changes in education policy during the pandemic, we have had to change the precise questions we have used to capture these two factors. Full details of how our approach responded to policy throughout the pandemic can be found in [Coronavirus and the impact on measures of UK government education output: March 2020 to February 2021](#).

The resulting materials and parental involvement factors, as well as the overall FTE discount, are shown for primary and secondary pupils in Figure 1. This analysis indicates that primary school pupils learning remotely covered a smaller fraction of the learning materials of their in-class peers and were more dependent on parental involvement than secondary school pupils. This likely reflects the greater independence of older pupils for whom remote learning is likely to have been more practicable than for many younger primary school pupils. As a consequence, we estimate that remote learning for secondary school pupils was a closer approximation to in-class learning than for primary school pupils, but for both groups remote learning was, at best, a partial substitute for in-class learning.

Figure 1: Components of the remote learning full-time equivalent (FTE) factor differ substantially between school phases

Components of the remote learning FTE factor, April 2020 to June 2021, split by school phase

Notes:

1. There are changes to the questions asked over time, see Section 2 for details.
2. Questions were not asked over the summer school break.
3. The overall remote learning FTE is calculated by multiplying the materials covered by the inverse of the parental involvement.

Download the data

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Using these same data, it is also possible to examine these factors and the resulting discount by school and teacher characteristics.

While the data we use are weighted by Teacher Tapp to reflect the school population, some of these groups have considerably smaller underlying sample sizes than the aggregate data used in the National Accounts, leading to greater sample variation. These subgroups have consequently been selected based on the statistical significance of the variation between the groups within them (except for the regional breakdowns, which are included for interest).

Reflecting the focus of these data, which were collected with the express purpose of measuring education output in the National Accounts, this analysis will focus only on the amount of materials covered and parental input. Users who are interested in pupil outcomes over this period may be interested in [Understanding Progress in the 2020/21 Academic Year \(PDF, 463KB\)](#).

3 . Free school meals

One of the most consistent differences in the remote learning experience across sub-groups is between schools in different free school meals (FSM) quartiles. FSM are available to children with parents who receive certain cash benefits (including income support) or receive universal credit with a household income of less than £7,400 a year (after tax and not including benefits). As a result, the proportion of FSM-eligible pupils in a school can be considered a proxy for the level of deprivation in that school, such as [Outcomes for pupils eligible for free school meals and identified with special educational needs \(PDF, 354KB\)](#). A similar logic is used when calculating the [Index of Multiple Deprivation](#).

The measures of FSM eligibility we use are constructed by Teacher Tapp. They rank all schools in England by the proportion of their pupils who are eligible for FSM and divide this list into four equally sized groups. Quartile 1 is for schools with the smallest proportion of FSM-eligible pupils; Quartile 4 is for schools with the largest fraction of eligible pupils.

These data indicate that the gap between remote and in-class learners is larger for pupils at schools with high levels of FSM eligibility than for schools in less deprived areas (Figure 2). Teachers at schools in quartile 4 reported that they were able to cover less material with remote learners relative to in-school learners throughout the coronavirus (COVID-19) period. In contrast, teachers at schools in quartile 1 reported the material they had covered with remote learners was closer to what they were able to cover with in-school learners. Although this gap has narrowed slightly in recent months, the cumulative impact on the learning provided to pupils over this period appears to have been considerable.

There are several possible explanations for this pattern. Firstly, it could be that teachers from schools with the fewest FSM-eligible pupils may be able to rely more on pupils having access to appropriate technology for remote working. A National Foundation for Educational Research survey on [pupil engagement in remote learning \(PDF, 1.18MB\)](#) found that the proportion of pupils with little or no access to Information Technology (IT) in the most deprived schools (those in the top quintile for proportion of pupils eligible for FSM) was double that of the least deprived schools. Teachers in the most deprived quintile of schools reported notably lower levels of pupil engagement than those in the middle quintile, and highlighted pupils with such limited IT access as being particularly difficult to engage. Teachers in the most deprived schools also reported lower levels of communication with their pupils, only being in regular contact with an average of 50% of their pupils compared with 67% of pupils in the least deprived schools. A further possibility is that social problems associated with the deprivation that links with FSM have a greater impact on pupils learning remotely than when they are in school.

Figure 2: Remote learners in schools with the most free school meal (FSM)-eligible pupils covered relatively less material

Amount of learning material covered by schools for remote learners as a proportion of learning material covered by in-school learners, April 2020 to June 2021, split by FSM quartile

Notes:

1. Questions were not asked over the school break in the summer.
2. Quartile 1 has the fewest FSM eligible pupils, whilst quartile 4 has the most.
3. There are changes to the questions asked over time, see Section 2 for details.

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Figure 3 shows that on average, pupils in the schools with the most FSM-eligible pupils were the most dependent on parental involvement in their learning. This gap was relatively large at the start of the pandemic but has also narrowed in recent months.

The factors driving this pattern may be the same as those driving the lower amount of learning materials covered by remote learners in schools with more FSM-eligible pupils. However, it is also possible that this reflects the availability of parental time, and a greater incidence of dual-worker households at schools with the fewest FSM-eligible pupils.

Figure 3: Schools with the fewest free school meal (FSM)-eligible pupils required the least parental involvement

The proportion of learning received dependent on the input of parents for remote learners, April 2020 to June 2021, split by FSM quartile

Notes:

1. Questions were not asked over the school break in the summer.
2. Quartile 1 has the fewest FSM-eligible pupils, whilst quartile 4 has the most.

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4 . Secondary school subject

The switch to remote learning during the coronavirus (COVID-19) pandemic also appears to have had a more pronounced impact in some school subject areas than in others. The secondary school data we collect from Teacher Tapp for use in the National Accounts indicates that the teaching of "arts including design and technology" has been particularly affected. Secondary school pupils that were remote learning in these subjects appear to have been able to cover significantly less material than their in-class peers (Figure 4). This gap has been relatively stable over the course of the pandemic.

This result is consistent with parents' views reported in the [Ofsted Annual Parents Survey](#), which asked about the subjects parents felt had been sufficiently covered during the COVID-19 period. They also seem intuitive, given the inherent difficulty of providing equivalent teaching to remote learners without equipment such as workshop tools or musical instruments in these subjects.

By contrast, subjects which can be readily taught without physical materials appear to have been less affected by the switch to remote learning. The secondary teaching of humanities is consistently the subject area where the amount of materials covered by remote learners is most similar to in-school learners, while mathematics and English perform similarly.

Figure 4: Arts teachers report remote learners covered less material compared with in-school learners

Amount of learning material covered by schools for remote learners as a proportion of learning material covered by in-school learners for secondary school pupils, April 2020 to June 2021, split by teacher subject

Notes:

1. Questions were not asked over the school summer holidays.
2. There are changes to the questions asked over time, see [Section 2](#) for details.

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The subjects "arts including design and technology" and "other including physical education (PE)" also appear to have been more dependent on parental instruction over the pandemic (Figure 5). The data we collect from Teacher Tapp indicates that the importance of parents to secondary instruction has fallen on average during the pandemic, possibly reflecting teachers' adaption to this new teaching medium. However, "arts including design and technology" and "other including physical education (PE)" have recorded among the highest levels of dependence of instruction at home over the pandemic, and do not display exactly the same pattern of falling dependence evident in other subject areas.

Figure 5: Pupils required more parental involvement in remote learning for arts and PE than in other subjects

The proportion of learning received dependent on the input of parents for remote learners in secondary schools, April 2020 to June 2021, split by teacher subject

Notes:

1. PE is physical education.
2. Questions were not asked over the school summer holidays.

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5 . Key Stages 1 and 2

Unlike secondary school teachers, primary school teachers typically teach a consistent class of pupils rather than teaching a subject to several classes. Reflecting this pattern of specialism, our Teacher Tapp data splits responding primary school teachers into those who teach Key Stage 1 (aged 5 to 7 years) and Key Stage 2 (aged 7 to 11 years). Early years teachers (children aged 4 years and under, including reception classes) are not included in this sample.

Parents have been essential for the delivery of education to primary school age pupils during the coronavirus (COVID-19) pandemic and have been particularly important at Key Stage 1. According to the teacher assessments gathered by Teacher Tapp, around 60% of the learning at Key Stage 1 was dependent on parental instruction for the first nine months of the pandemic, falling to closer to 40% in recent months (Figure 6). At Key Stage 2 their role remains important, but at a lower level; for this group, parents accounted for between a third and around a fifth of the learning covered.

These results suggest that the difference in parental dependence between primary and secondary age pupils is in large part driven by the Key Stage 1 pupils. These intuitive results highlight that younger pupils, who are just starting to learn to read, write and use digital media, clearly have much less independent learning potential than pupils a few years older, and how much of their learning has been dependent on parents during the pandemic.

Figure 6: Key Stage 1 pupils' learning is more dependent on parental involvement than older pupils

The proportion of learning received dependent on the input of parents for remote learners in primary schools, April 2020 to June 2021, split by pupil Key Stage

Notes:

1. Questions were not asked over the school summer holidays.

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Although parents have played a much larger role in instructing Key Stage 1 pupils than older Key Stage 2 pupils, there is much less evidence that this has affected the materials these pupils have covered. Figure 7 shows that while remote learners in Key stages 1 and 2 have both covered less than their in-class peers, there is relatively little difference between them.

Figure 7: Key Stage 1 teachers report remote learners covered less material relative to in-class learners

Amount of learning materials covered by schools for remote learners as a proportion of learning materials covered by in-school learners in primary schools, April 2020 to June 2021, split by pupil Key Stage

Notes:

1. Questions were not asked over the school summer holidays.
2. There are changes to the questions asked over time, see [Section 2](#) for details.

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One potential explanation for this could be that within a primary school, the resources for all pupils may well be fairly uniform, for instance use of the same online learning platforms to provide resources to children. Data from the [National Foundation for Educational Research \(PDF, 1.18MB\)](#) survey on remote learning does appear to show a negative relationship between a pupil being in Key Stage 1 and their engagement with remote learning, but this finding is only weakly statistically significant.

6 . Region

It is possible to use the data we receive from Teacher Tapp to examine differences in the experience of remote learning by English region. Figures 8a and 8b show how the remote learning full-time equivalent (FTE) factor varies by region, for primary and secondary schools respectively. To ensure an adequate sample size we have merged some regions in this analysis.

Taken together, there is little evidence here that remote learning has been significantly more successful in any one region than another. For primary teaching, the South West region reports that remote learning was the closest approximation to in-class teaching for much of the course of the coronavirus (COVID-19) pandemic, while Yorkshire and the North East is consistently among the lowest reporting regions. However, the differences here are mostly not statistically significant and may reflect sample variation, particularly for primary schools where sample sizes are smaller. For secondary teaching, the extent of regional variation is smaller still.

Figure 8a: Remote learning full time equivalent (FTE) in primary schools was often slightly higher in the South West

Primary school remote learning FTE factor, April 2020 to June 2021, split by English region

Notes:

1. Questions were not asked over the school summer holidays.

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Figure 8b: There is little variation in remote learning full time equivalent (FTE) for secondary schools across England

Secondary school remote learning FTE factor, April 2020 to June 2021, split by English region

Notes:

1. Questions were not asked over the school summer holidays.

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7 . Remote schooling through the coronavirus (COVID-19) pandemic, England data

[Remote schooling through the coronavirus \(COVID-19\) pandemic, England](#)

Dataset | Released 22 September 2021

Data on the amount of learning materials covered by pupils and the dependence of remote learning on parental input in over the COVID-19 pandemic period.

8 . Data sources and quality

[Teacher Tapp](#) is a survey run by Educational Intelligence Limited which asks teachers in England a range of multi-choice questions about their job. The survey is sent out in the last school week of each month. The results are weighted using the English School Workforce Census (on the basis of the sex, age and leadership status of teachers and on the region and setting of the school) and the resulting information is used to inform policy debates. For this analysis, the data received are in a monthly format and come pre-stratified into the groups discussed above. Any subgroup with too few responses is removed from the data to avoid issues of disclosure.

Data can be found in the [accompanying dataset](#).

The main strengths of the Teacher Tapp data are:

- it is available quickly after the reporting period and the monthly periodicity is sufficiently frequent to respond to changes in educational policy, such as school closures
- the ability to split the teachers into many sub-groups while controlling for school phase allows for deeper understanding of aggregate trends
- the results are weighted by teacher demographics to account for potential underreporting by teachers from some groups

The main limitations of the Teacher Tapp data are:

- participation in the survey is optional, meaning the results will reflect the responses of teachers who participated, which could potentially cause non-response bias
- reflecting changes in the policy environment, the questions posed in the Teacher Tapp survey have been modified by Office for National Statistics over the pandemic, so it is not possible to produce a fully consistent time series throughout; see [Coronavirus and the impact on measures of UK government education output: March 2020 to February 2021](#) for details.
- For some breakdowns, the sample size in certain groups is small, and could therefore be subject to more sample bias.

9 . Related links

[Coronavirus and the impact on measures of UK government education output: March 2020 to February 2021](#)

Article | Released 31 March 2021

A summary of the measurement challenges for UK government education output from March 2020 to February 2021 and the change in methodology as a response.

[Ofsted annual parents survey](#)

Survey | Released 20 May 2021

Survey providing timely evidence about the perception and awareness of Ofsted among parents, and assessment of their opinions on how schools have coped with the COVID-19 outbreak.