

LEARNING INEQUALITIES DURING COVID-19

HOW DID FAMILIES COPE WITH HOME-SCHOOLING?

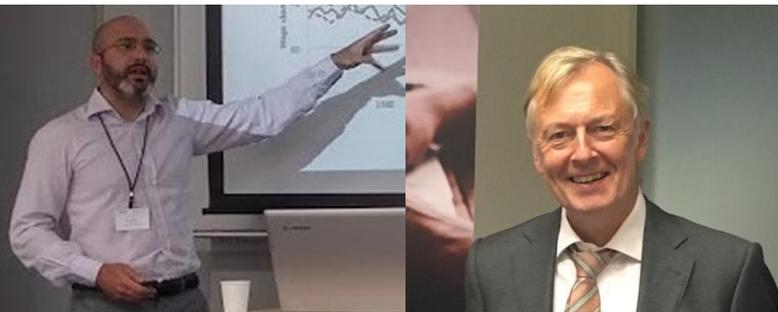
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Background

- School closures because of Covid-19
- Schools were closed on 21 March, except for the children of key workers
- The abrupt transition to home-schooling may have had severe consequences for students across the UK.
- These consequences may have been more severe for socio-economically disadvantaged students
- Hence, the transition to distance schooling is likely to exacerbate inequalities by socio-economic group

Closure of schools during the COVID-19 lockdown could increase inequalities in primary and secondary education

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Source: Digital Skills Partnership

A new study has highlighted the impact that the closure of schools during the COVID-19 lockdown could have on children's education, with more from disadvantaged backgrounds than others.

By comparing the average amount of time children have spent learning at home compared to attending school, researchers from education firm [Education Endowment Foundation](#)—along with the main parents of a large employer, or in a managerial or professional occupation, such as parents who work for firms and the effect on how often children could catch up with where they would be had schools stayed open. For secondary school children from the most disadvantaged families—where the researcher is less in a professional or managerial occupation, often parents that do not regularly work from home and the children do not have a computer with their family members—their homework is a year

They also considered the primary school children from the most advantaged families where the researcher is not a parent where they would be a fairly high-qualified parent and those from disadvantaged families would be even further behind.

The research, by [Paul Taylor](#), [David Balfanz](#) and [Neil Parsons](#) from the University of Southampton, is part of the national [Education Endowment Foundation](#) study to estimate the effect of school closures on learning from the pandemic. It is an primary and secondary education in the month of April.

According to the data provided, children in primary education with the most advantaged circumstances spent nearly four hours each day on [homework](#) compared to just one hour each day for those in disadvantaged circumstances. For children in primary school education, the most advantaged spent nearly three hours on school work compared to one hour for each day for the most disadvantaged pupils.

Explaining the possible reasons for these results, Dr Neil Parsons of the University of Southampton, who led the study, said: "This study also shows that professional and managerial occupations, which are associated with higher education, are better able to equip their children's home learning, which you also consider that such parents are better able to provide primary care than non-professional and [learning outcomes](#) in both in a school learning system. This puts their children in a top position to be able to catch up with those from non-professional and managerial families."

Dr Parsons continued: "The transition to distance learning is likely to increase inequalities in education between different socio-economic groups if the schools or school work provided and the quality of

The consequences of losing school

Losing hours of school has negative effects on students' cognitive abilities, national exam results, finishing upper secondary, entering university, finding a job, future earnings, health, and life-prospects of their children.

- During summer vacation closure, students typically lose approximately 1.8 months of progress in maths skills and 4 months of progress in spelling skills. (Cooper et al., 1996).
- Being exposed to the average incidence of strikes (88) during primary school reduces earnings of males and females by 3.2% and 1.9% by age 40 in Argentina. Most of the effect is accounted for by the reduction of years of education completed (Jaume & Willén, 2019).

The consequences of losing school

- Engzell, Frey and Verhagen (2020) - primary school closure during the lockdown in the Netherlands using a dataset representative of the Dutch primary school student population, comprising 350,000 students (15% of total).
- In Dutch primary schools, standardized national learning tests are held twice a year. In January-February and May-June. In 2020, the tests occurred exactly before and after school closure, which lasted 8 weeks starting on March 16.
- The authors compared the progress in test results of 2020 with that of previous years and found that the school closure was associated with a reduction in scores on math, spelling and reading tests by three percentage points, equal to 0.08 standard deviations.
- 8 weeks of closure corresponds to the attainment loss that would occur with a 20% reduction in the duration of the school year. This means that students made little or no progress whilst learning from home. The test score reduction is 55% larger for children from lower educated families.

The Netherlands are an interesting case because:

1. Is one of the countries with the highest penetration rate of broadband, and where the government and local administrations have paid great attention to the computerization of schools.
2. School closures were one of the shortest.

The consequences of losing school

- An extra ten days of school instruction raises scores on (crystallised) intelligence tests by approximately 1% of a standard deviation. An additional year of schooling increases intelligence test scores by 20% (Carlsson et al., 2015).
- A reform that shortened temporarily the yearly number of weeks of schooling from 37 to 24 in Germany in the 1960s for some students led to increased grade repetition in primary school and to fewer students attending higher secondary school tracks (Pischke, 2007).

Other studies looked at New Zealand (earthquake) and New Orleans (hurricane Katrina) as well. But not like the current pandemic.

Other potential factors

- Parental socio-economic characteristics
 - E.g. “medium to strong SES–achievement relation” (Sirin, 2005, p. 417).
- Family structure
 - E.g. economic deprivation is one of the salient explanations as to why students who live in single-parent families have lower educational outcomes than their counterparts in two-parent households (Hampden-Thompson, 2009).
- Birth order and family size
 - Uneven educational, attentional and emotional investment evenly across children in the family (e.g. Booth & Kee, 2007).

Research objectives

We use data from Understanding Society, the UK Household Longitudinal Study to:

- Analyse the consequences of school closure during the Covid-19 pandemic for the inequalities by socio-economic group in the:
 - Uptake of homework in homes during the Covid lockdown
 - Learning loss at the end of the lockdown
- Propose policies to mitigate the likely impact of the school closure on the learning gap by socio-economic group

Methodology

- Data
 - Covid-19 dataset from the April wave of the Understanding Society study, which surveyed all household members and included a module on schooling undertaken by parents.
 - Response rate for the April wave was 42%.
 - Also included data from previous Understanding Society waves.
- Variables
 - Dependent:
pri/sec hrs schoolwork, hrs support, offline lessons, online lessons
 - Independent:
parental occupation (NS-SEC), working patterns & family structure, birth order, computer, gender, age, family size, nationality, regional features
- Analytical approach
 - Descriptive statistics
 - Mixed Models in Stata 16

Findings – general

- As of April 2020, in the middle of the lockdown, online lessons were only provided by a minority of schools: only 33% of children were attending schools that provided at least one online lesson.
- During lockdown, primary pupils lost 195 hours of school, secondary students lost 150.
- Children in primary schools spent on average 2.4 hours per day doing schoolwork (comprising on average 2.2 offline lessons through a mix of worksheets, assignments and watching videos, and on average 0.6 online lessons); plus 2 hours per day of support from adults.
- Children in secondary schools spent on average 3 hours per day doing schoolwork (comprising on average 2.3 offline lessons and 1 online lesson); plus 0.9 hours per day of support from adults.

Findings – inequalities by occupation of main parent

Table – Hours of schoolwork per day by parents' occupation

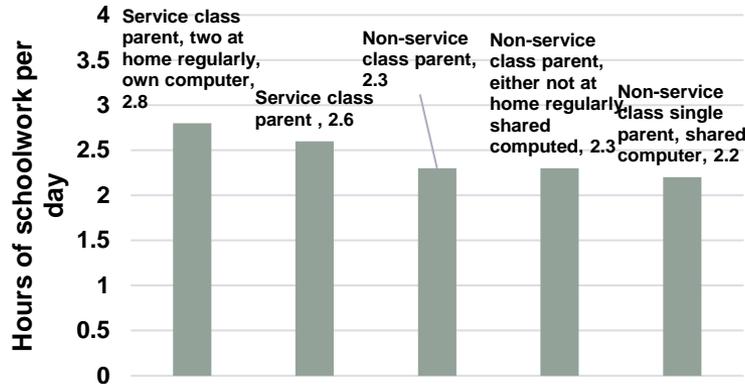
	Primary	Secondary
Large employers & higher management	2.54	3.08
Higher professional	2.59	3.37
Lower management & professional	2.54	3.08
Intermediate	2.34	3.15
Small employers & own account	2.28	2.84
Lower supervisory & technical	2.61	2.88
Semi-routine	2.15	2.97
Routine	2.03	2.47

Parental occupation alone is a significant determinant of differences in the volume of schoolwork completed by students

Next slide shows that its effect is magnified when combined with access to computers and working patterns

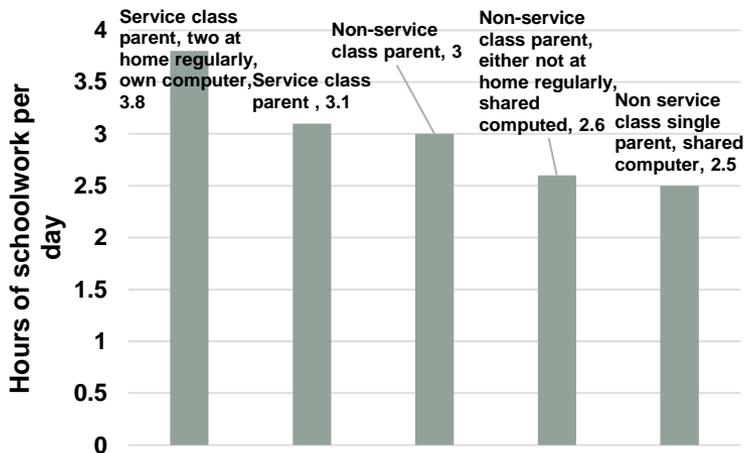
Findings – inequalities by socio-economic groups

Hours of schoolwork (primary)



- Children in the most advantaged families spent on average 0.5 hours more per day on school work in primary schools, and 1.2 hours more per day in secondary schools than more disadvantaged children.

Hours of schoolwork (secondary)



- Advantaged families: where both parents work regularly from home, where the main parent is in a 'service class' and where the children have their own computer
- Disadvantaged families: where the main parent is not in a service class occupation, where the child has to share a computer with other family members and where either parent does not work regularly from home

Findings – family structure – working patterns

- Parents are better able to assist their children when they are both working from home. Having both parents regularly working from home is significantly and positively associated with a larger total volume of schoolwork. When only one parent is regularly home or when the reason for staying home is unemployment, there is no advantage.
- The advantage of having both parents working from home regularly is mostly accounted for by differences between families in the uptake of offline lessons, as online lessons and amount of support from adults are not associated with parental work patterns.
- Living in a single-parent family was found to have a small (significant only at the secondary level) negative association with the hours of schoolwork

Findings – family structure – siblings

The presence of older siblings at home was found to have a negative and significant association with secondary education outcomes, but the results were mixed for primary education outcomes. In primary, younger siblings were found to complete more hours of schoolwork, but they did not receive different levels of support from adults. Compared to being the eldest sibling, being a single child is related to more hours of schoolwork, more hours of support from adults and more offline lessons in primary education. The relationship with online lessons and being a single child is negative and non-significant in primary education. At the secondary level, single children complete fewer hours of schoolwork (although not significantly so), receive fewer hours of support from adults (significant so) and take fewer lessons (although the coefficient is significant only for offline lessons).

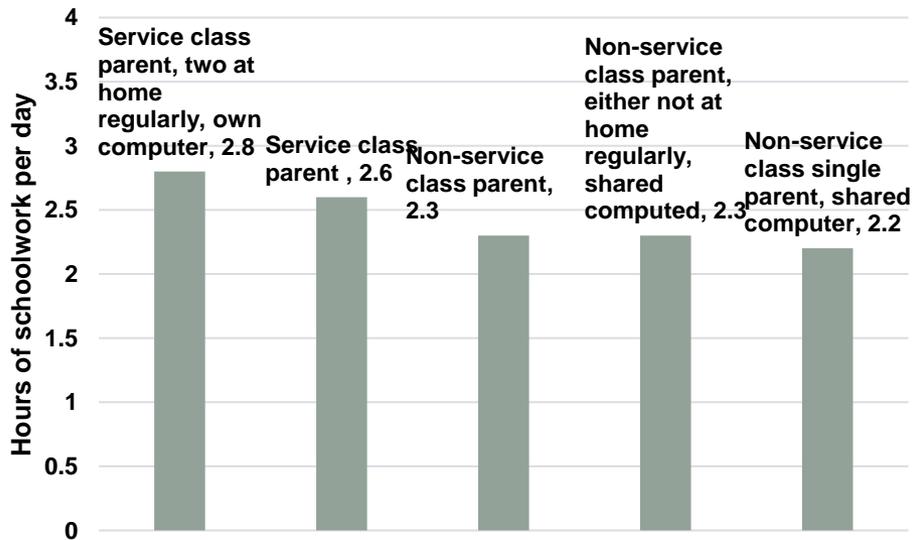
Findings – other factors

- Not having a computer is negatively and substantially associated with schoolwork and adult support across primary and secondary education, although for secondary students the coefficients are non-significant for hours of support from adults and offline lessons.
- Female students complete a larger volume of schoolwork and take a larger number of offline lessons than their male counterparts.
- Children's age shows mixed results, but the results are conditional on education phase (primary / secondary) and the presence or absence of older siblings. Size of family also shows mixed (small and non-significant) associations with outcomes, except for the negative and significant association with hours of schoolwork at the secondary level.
- The larger the percentage of the working population working from home, the more hours of schoolwork, the more offline lessons in primary school and the more online lessons in secondary school.

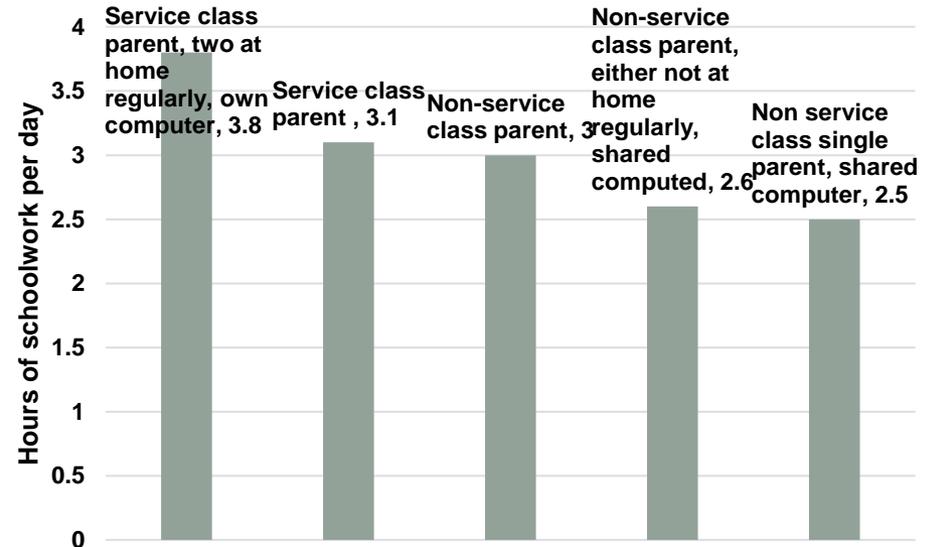
Inequalities between socio-economic groups

Focusing on circumstances which are common and policy relevant, we present the marginal effects of the combination of being in a service class family, working patterns and access to computers (hrs per day).

Hours of schoolwork (primary)



Hours of schoolwork (secondary)



An estimation of learning loss

- Two assumptions
 - Assumption 1: one additional weekly hour of instruction over the school year is associated with an increase in subject test scores of about 6% of a standard deviation.
 - Assumption 2: learning gains on most national and international tests during one year are equal to between one-quarter and one-third of a standard deviation
- Primary students lost 195 school hours (20% of the total number of hours in primary schools) or 30% of a standard deviation, roughly one year of schooling
- Secondary students lost 150 school hours (15% of the total number of hours in primary schools) or 23% of a standard deviation, slightly less than a year of schooling
- Socio-economic differences in the estimated loss are marked. In primary schools, children from the most advantaged group have lost 28%¹ of a standard deviation on average during the Spring 2020 lockdown, while children from the least advantaged group have lost 31% of a standard deviation.
- In secondary education, children from the most advantaged group have lost 14% of a standard deviation on average across subjects, while children from the least advantaged group have lost twice as much, 28% of a standard deviation.

¹ Note that this estimate differs from the one in the working paper as in the latest analyses we adjusted some covariates.

Conclusions

- Both parents working from home: difference in volume of schoolwork, not adult support. It's not the quantity but quality of support.
- Transition to distance schooling exacerbates inequalities because of volume and support.
- Influence parental occupation magnified by access to computers and working patterns.

Recommendations

- It is vital that schools remain open during any further phases of high infection if at all possible in order to avoid losing years of academic progress and further widening the achievement gap between socio-economic groups.
- If schools remain open throughout the current academic year, it may be sensible to couple remedying programmes such as academic tutoring throughout the year with a delay to the start of the 2021 public examinations.
- The government catch-up funding and the national tutoring programme are a timely response to close the achievement gap between socio-economic groups.
- The total allocation per pupil of £80, which amounts to 6 additional days of school, is likely to be insufficient to mitigate significantly the achievement gap between socio-economic groups widened by the pandemic.
- Tutoring should amount to several weeks of school.

Recommendations

- Should schools be forced to close again in the event of another lockdown, inequalities in learning can be remediated by providing students with better access to IT and by providing online academic tutors to compensate for the absence of parents who cannot work home
- Assessing the consequences of school closure on the actual learning loss across socio-economic groups should be a priority. New survey data should be collected for this purpose and analysed in combination with existing records from the national pupil dataset.

Limitations and further questions

- Outcome variable is self-report, not for example achievement (but does take into account family, rather than just school).
- With these data not possible to truly disentangle school effects.
- Effect sizes....months perhaps misleading.
- Government has provided support with resources e.g. Oak national academy.
- A second lockdown likely different. To what extent are support structures now improved?

Questions and discussion



Also see our full report via this [link](#).

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