

Written evidence submitted by Centre for Education Policy and Equalising Opportunities, UCL Institute of Education

Summary:

The Centre for Education Policy and Equalising Opportunities (CEPEO) is a new research centre within UCL Institute of Education, aimed at designing and informing evidence-led education policy and wider practice that equalise opportunities for all.

The impact of the COVID-19 pandemic on education is likely to be large and affect those from disadvantaged backgrounds the most. This submission provides a summary of the relevant academic evidence on educational inequalities as a result of school absences, the drivers of these inequalities, and the likely implications. We also summarise the evidence on the likely impact of cancelling formal exams, and fairness implications of the suggested standardisation process.

Previous research on school absences suggests that:

- Pupil achievement can be harmed by term-time school closures (coordinated absences).
- The magnitude of this effect will likely depend on what kind of educational activities pupils engage in during the closure (see the section on inequalities in home learning).
- The best available estimates suggest that, if pupils miss three months of schooling this year, they could experience learning gains in maths as low as 37-50% of what would otherwise have been expected for this academic year.
- Pupils from low-income households experience a larger negative effect from coordinated absences.
- Coordinated absences lasting for several weeks can have small long-run negative effects on pupil achievement.

Previous work on inequalities in the home learning environment suggests that:

- Families from poorer backgrounds are more likely to face barriers, including constraints in terms of both resources and time.
- Disadvantaged families have reduced access to digital devices that can be used for learning.
- Disadvantaged families also have reduced access to reliable and fast internet connections.
- Families from deprived backgrounds have reduced access to physical space.
- While parents report similar levels of engagement with home schooling during lockdown by education level, parents with lower levels of education have less confidence in their abilities to cover the learning materials.
- Parents from more affluent families invest more in private one-to-one tutoring.
- Working parents may have less time available to spend on homeschooling.

Implications of school closures:

- Increased pupil absences will have a negative effect on achievement and increase achievement gaps.
- Inequalities in resources and time available to families is likely to exacerbate existing achievement gaps.

Likely implications of cancelling formal examinations:

- While teachers' predictions commonly lead to over-prediction of results, standardising centre assessment grades is likely to mitigate this effect.
- Concerns remain for 'atypical' pupils – high achievers in historically low-performing schools could be penalized due to this process.

Recommendations:

- Fund small group or one-to-one tutoring for lower income pupils: Catch-up, in the form of pupil premium-type funding to lower income families immediately to allow for additional tutoring in English and maths.

- Contextualize admissions for grammar schools: In areas with grammar schools, the scores from the '11 plus' exams should be adjusted to account for these socio-economic penalties, in a similar vein to the adjustment that occurs for the pupil's age within the school year in Kent.
- Validate calculated grades: use externally available information where possible to validate 'atypical' students, based on their prior achievement before grading individual students down.

The effect of whole-school closures on pupil achievement:

Coordinated absences, in which an entire school is closed during term time, are uncommon. Nevertheless, three studies have been conducted linking such closures to pupil achievement. Marcotte & Hemelt (2007) use data on school closures due to severe snow in Maryland and find that each day of school closure leads to a 0.4-1.1 percentage point reduction in the proportion of pupils achieving a pass mark in their exams. Goodman (2014) uses a similar approach and finds that each day of absence results in 0.03-0.05% of a standard deviation reduction in achievement, with slightly larger effects for schools serving disadvantaged intakes.

Jaume and Willen (2019) investigate the effects of long-running teacher strikes in Argentina. They find that each additional ten days that *primary* school pupils are exposed to school closures due to teacher strikes results in a 0.3% reduction in the proportion receiving their *high school* diploma. Again, pupils from low income households experience a larger detrimental effect. In the period covered by the study, the average school experiences around 40 days (eight weeks) of unscheduled closures due to strikes each year, which suggests that prolonged coordinated absences can have a (small) negative long-run effect on achievement.

A final source of evidence on the effects of absence on achievement comes from studies on how much pupils forget over the summer holidays. The few rigorous studies that exist on this subject indicate that pupils do experience loss of learning over the summer holiday, though the exact quantum is hard to pin down (von Hippel, Workman, & Downey, 2018; Kuhfeld, 2019; Workman & Merry, 2019). These findings suggest that longer periods of coordinated school absence – such as those experienced due to Covid-19 – may have a detrimental effect via pupils forgetting previously learned content, as well as through lost instructional time.

Kuhfeld et al. (2020) synthesise much of the above literature to estimate the learning loss that might occur assuming pupils miss three months of school this year. They estimate that this will result in learning gains in maths 37-50% of what would otherwise have been expected for this academic year and learning gains for reading 63-68% of what would otherwise have been expected. It should be noted that these estimates do not take account of any remote teaching, home schooling or private tuition occurring during the lockdown and might therefore be considered upper bounds on learning loss over the period.

Home learning environment barriers for disadvantaged pupils:

Children from disadvantaged families face multiple barriers to achievement - disadvantaged families face more constraints in terms of both their resources and their time. Washbrook and Waldfogel (2011) find that half the vocabulary gap at school entry can be explained by measurable aspects of the child's environment, with the home learning environment being the most significant factor in explaining the development gap. The remainder is explained by factors associated with income, and parental education. Similarly, work from CEPEO by Macmillan and Tominey (2019) show that increasing maternal education led to an increase in incomes and educational resources available in the home during their offspring's early childhood, which is associated with higher cognitive skills at age 5 and 7.

Using data from the Longitudinal Study of Young People in England (LSYPE), Chowdry, Crawford and Goodman (2009) found significant socio-economic differences in families' computer and internet access, with 97% of the richest fifth of the population having access to these resources, compared to 46% of the poorest fifth. Access to these material resources in the home were important in explaining, in part, the significant gap in attainment between children from low and high socio-economic backgrounds.

More recent statistics have shown an improvement in access to technology devices that could be used for educational purposes at home. 88% of 6-17-year olds own or have access to a computer or laptop and 85% own or have access to a touch-screen tablet (YouGov, 2019). This dataset did not include any data about socio-economic related differences.

However, owning or having access to technological devices is not enough. Access to a reliable and fast Internet connection is recognised as a key barrier to the effective use of educational technology in schools (McFarlane, 2019) and this will also hold true for the home learning environment. Children also need the physical space in which to carry out home learning activities and those from lower socio-economic backgrounds may be at greater risk of these additional barriers (Doyle, 2020).

Del Bono et al. (2016) find that mothers with university degrees spend a higher proportion of time engaging with the child's learning at home, compared to mothers with no qualifications, which is linked to increased child literacy and socio-emotional outcomes between ages 3-7 years. Furthermore, the impact of low parental education may mean that parents from low socio-economic backgrounds are less likely to have the basic skills needed to be able to engage with learning materials and support their children's learning at home. A study by

National Numeracy (2019) found that only 22% of working-aged adults are functionally numerate, defined as equivalent to a GCSE pass (Grade 4/C) or above, and 57% are functionally literate.

Parents may also hold their own anxieties towards learning, particularly in mathematics (Malanchini et al., 2017). Statistics suggest 20% of adults in the UK feel anxious when confronted with a mathematical problem (Maths Anxiety Trust, 2018), although there is little data on socio-economic differences in maths anxiety (Dowker, Sarkar, & Looi, 2016). Maloney et al. (2015) found that early school-aged children of maths-anxious parents learnt significantly less maths and reported their own higher maths anxiety over the school year, but only when maths-anxious parents provided frequent and well-meaning help with homework. Parental maths anxiety was not found to affect children's reading development.

In a recent report from Ireland, in response to the COVID-19 pandemic, Doyle (2020) found there was little difference by levels of parental education in the amount of time per day parents are currently engaged in home schooling. However, the average time spent on home schooling, approximately 1-2 hours per day, is significantly less than the typical school day. Working parents also reported that it is placing significant demands on their time as they attempt to achieve a balance between work and supporting home learning with their children. Given such time pressures, it appears to be important to focus on the quality of children's home learning, rather than simply the quantity.

Similarly from the UK, a forthcoming blog by CEPEO documents that while parent's efforts to home school do not vary by education level or social class, their confidence in both their ability to home school their children, and their confidence in whether their children are continuing to learn do vary by parental education, with lower educated parents reporting lower confidence in both (Anders et al., 2020).

These existing barriers in terms of achievement gaps are further emphasised by the investment that the most advantaged parents make in their children's education in the form of extra-curricular tutoring. Jerrim and Sims (2019) shows that more advantaged parents are more likely to invest in extra English and maths lessons, through private tutoring or coaching. This is particularly pronounced in selective areas, and in subjects that are core to the 11 plus examination (but not in science, which is not an '11 plus' subject), supporting the view of grammar school head teachers that children from more affluent, middle class families are coached to pass the entrance exam (Cribb et al., 2013).

Finally, the evidence suggests that all of these barriers will be more pronounced for the current cohort of year 5s who are due to sit the '11 plus' examination in September 2020. The current school shutdown due to coronavirus is very likely to widen the achievement gap between the most and least disadvantaged pupils (see work from CEPEO members Sims, 2020, and Outhwaite, 2020). New evidence from the Sutton Trust finds that children in households earning more than £60k are twice as likely to currently be receiving tutoring during school closure as those children in households earning under £30k (Cullinane and Montacute, 2020).

Cancelling formal examinations:

Formal A-level and GCSE exams have been cancelled, and will be replaced by calculated grades, with teachers' predictions likely to be a significant component of these calculations. Work by Murphy and Wyness (2020) analysed teachers predicted grades, and Dilnot, Macmillan and Wyness (2020) estimated students' grades based on their prior attainment at Key Stage 2 and GCSE level, comparing these to their actual A-level grades. Comparing the accuracy of prior achievement-based predictions to the accuracy of teacher based predicted grades (as estimated by Murphy and Wyness 2020), the analysis shows that predicting pupil A-level scores using their own prior attainment generally is more successful than using teachers' own predictions. In particular, modelling grades based on prior achievement results in 22% accuracy (i.e. 22% of students' predicted grades matched their actual grades) versus 16% accuracy from teacher predictions (based on best 3 A-levels in each case). While this is likely to be an under-estimation of accuracy given the sample restrictions, this analysis shows that there is still likely to be some inaccuracy in teacher's predictions, and that using data on individuals' past achievement (which is not currently proposed by Ofqual) might improve prediction accuracy.

Support catch-up interventions:

Across three systematic reviews and meta-analyses, small group instruction (e.g. groups of 3-5 pupils) and one-to-one tutoring were consistently found to be the most effective form of targeted intervention for boosting reading and mathematics attainment of at-risk children aged 4-19 years (Dietrichson et al., 2011; Dietrichson et al., 2020; Nelson and McMaster, 2019). These studies considered children at-risk of learning vulnerabilities based on their low-socio-economic status and special educational needs.

These studies also found significant benefits associated with interventions that incorporated feedback and progress monitoring (Dietrichson et al., 2017; Dietrichson et al., 2020), mixed ability groupings for mathematics with young children aged 4-8 years (Nelson and McMaster, 2019), and peer assisted learning with older children aged 12-19 years (Dietrichson et al., 2020).

In contrast, peer assisted learning was found to be the least beneficial for young, at-risk children (Nelson and McMaster, 2019). Computer assisted instruction and incentive interventions also showed less beneficial impacts compared to small group instruction in closing the achievement gap in reading and mathematics between at-risk and not-at-risk students aged 12-19 years (Dietrichson et al., 2020).

Summary and Implications:

In summary, long run coordinated absences due to e.g. COVID-19 will likely have negative effect on achievement, though the magnitude of this effect will depend on the alternative forms of education accessed during the closures.

There are many potential layers of influence that cause inequalities in the home learning environment, including low levels of parental education and household income constraints. Research consistently demonstrates a strong intergenerational association between these parental factors and child outcomes.

Families from lower socio-economic backgrounds with lower levels of parental education and household income, coupled with the stress of living in poverty (Bradley & Corwyn, 2002) are likely to experience multiple challenges in supporting their child's home learning. For example, limited access to resources, including digital devices that can be used to facilitate learning and a reliable and fast Internet connection. Low levels of adult numeracy and literacy, as well as anxieties towards learning, particularly in mathematics, may also pose significant challenges for parents/caregivers supporting their child's home learning during school closures.

For cancelling formal examinations and the suggested standardisation process, the evidence supports the proposed approach to standardise according to the centre's historical performance, given that there is likely to be inaccuracy in the teacher provided predictions, and potential overestimation. However, a further concern with the standardisation process (and in particular the aim to use centres' historical performance to standardise) is that it could impact "atypical" students. For example, a high performer at a historically low attaining school could see his/her grade reduced as a result of this standardisation process. We would recommend using externally available information where possible to validate the outlier students, based on individual-level prior attainment (GCSEs, KS2 etc).

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