

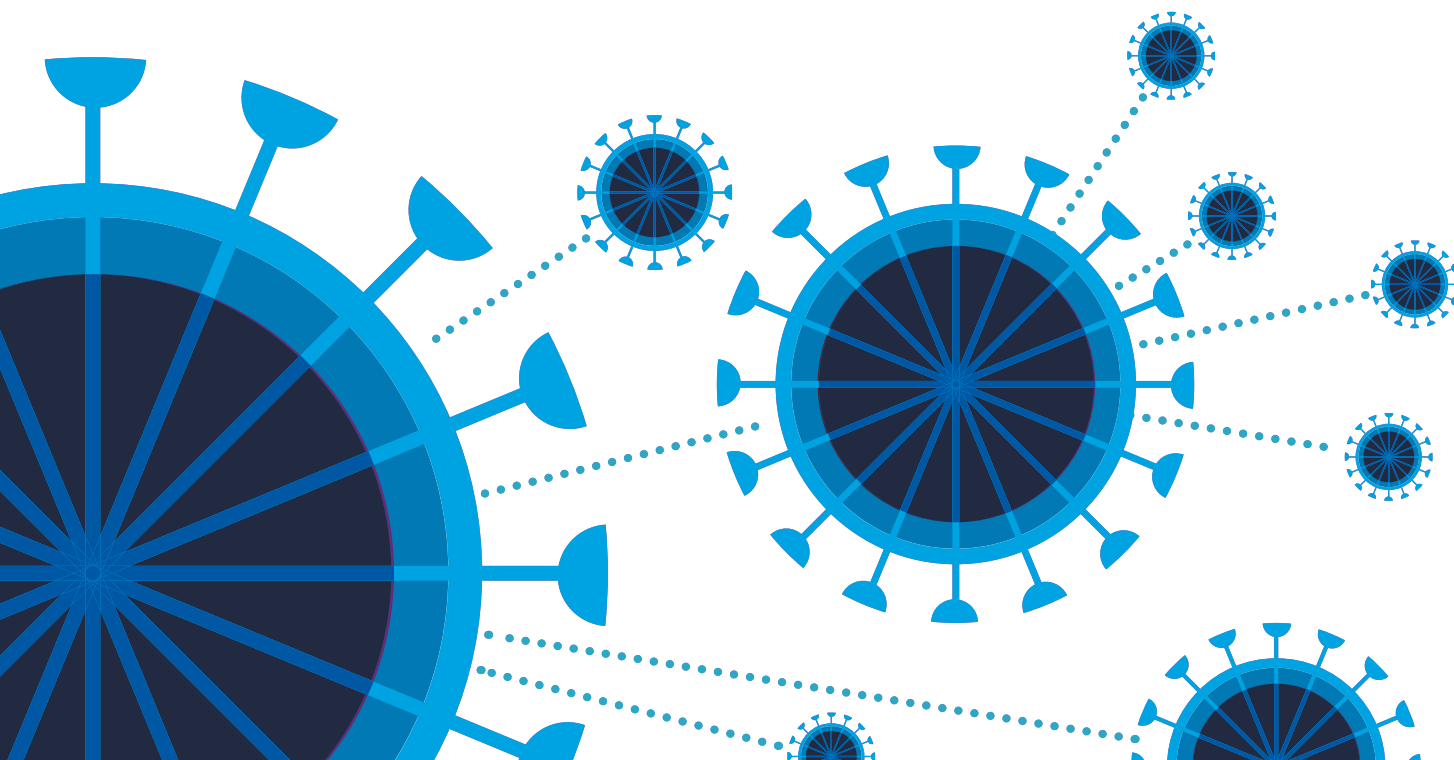
A series of background briefings on the policy issues arising from the Covid-19 pandemic

Covid-19 school shutdowns: What will they do to our children's education?

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A CEP Covid-19 analysis

Paper No.001



**Covid-19 school shutdowns:
What will they do to our children's education?**

CEP COVID-19 ANALYSIS

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Summary

- Evidence from unexpected temporary school closures and reduced instruction time suggests school closures will reduce educational achievement, both in the short and long term.
- Children from disadvantaged backgrounds are likely to be affected more than others by school closures, with fewer family resources and less access to online learning resources to offset lost instruction time.
- In England, the total cost of the resources lost in each week of state school closure is more than £1 billion.
- Educational deficits from time lost to school shutdowns can be made up with additional hours of teaching when schools reopen, though schools might need to put back more hours than were lost and it may not be feasible to do this within the traditional school year.
- Compensating lost instruction time through additional resources, without additional hours, is likely to be even more expensive.

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Introduction

The global outbreak of Covid-19 in 2020 has led to a range of measures to combat spread of the infection and prevent overload of health services, most contentiously, the ‘lockdown’ of society imposed by governments in many countries. The justification for closures of businesses, schools and restrictions on travel has been scientific advice on the potential benefits of reduced social contact on the speed of spread of the virus. But these restrictions have real and wide-ranging adverse social, economic and health impacts, which need to be discussed and quantified. Some of these costs may be temporary; others may be permanent. An important example which has potentially lifelong impact is the closure of schools which, if lengthy, could permanently impact the education and future lives of a generation of children.

School closures in England have partly coincided with Easter holidays, so only a few weeks of schooling might have been lost if schools open soon or have successfully moved to remote, online teaching (and some schools have remained open for key workers to provide child care). Still, re-opening for the majority of schools might be gradual and it would be no surprise if losing weeks of school contact time had some impact on children’s achievement. And if achievement is affected, so too might be employment, earnings and lifetime wellbeing. Can the academic literature tell us something more specific about how big an impact school closures will have and how different groups of children are affected?

Effects of unexpected shutdowns on educational achievement and earnings

Obviously, there’s been nothing recently like the Covid-19 pandemic from which we can learn directly. But researchers have studied the effects on students of other events that lead to temporary school closures, and the effects of changes in teaching schedules and length of school year. So, what can this work tell us? The picture on these unexpected shutdowns and changes of teaching time is not completely clear-cut, but the few studies available typically find quite large effects.

Looking at teacher strikes in Canada, Baker (2013) finds that school closures of ten days or more reduce achievement, with the biggest effects in maths. Standardising his results for the effect of a four-week (20 day) closure suggests we could expect students to lose out by the equivalent of half of a standard deviation in the distribution of achievement. This is roughly

like moving a middle-ranking child down to the bottom 30% of children. Johnson (2011), again on strikes and labour disputes in Canada, tells a similar story, with children from less-educated parents particularly affected. Belot and Webbink (2010) look at the effects of school strikes in French-speaking areas of Belgium in 1990 and find that French-speaking students who were of school age during the strikes end up with less completed years of education (around 2/3 to 3/4 of a year) than their counterparts in non-striking Flemish-speaking areas – again around 20% of a standard deviation in educational attainment, though the strikes here lasted for six weeks.

In 2011 and 2012, there was a wave of student protests and school closures in Chile affecting 205 schools and resulting in 8 million lost pupil days. In a unique study on the effects of school closures due to these protests, Montebruno (2020) finds ten days of lost schooling costs students around 13% of a standard deviation in achievement, rising to 24% for long closures of 50 days. To be sure, these lost days were somewhat self-inflicted, due to students occupying schools, and there could be many direct effects from revolutionary activity which might have nothing to do with school closures. But the impacts look broadly similar to those of strikes.

Another reason for temporary school closures is the weather, with ‘snow days’ causing many lost days in the US. Goodman (2014) studies the effects of snow, school closure and student absence in Massachusetts, where lost snow days reduce teaching time prior to the state’s annual tests (the snow days are typically made up after the tests). He finds no effect from closures, presumably because they are of short duration. Students do lose out from not attending school due to snow, but not when the whole school is shut down.

The link between better educational outcomes and subsequent employment and earnings suggests we would expect some impact from school closures on these outcomes. But the limited evidence available suggests that a dip in exam performance from less time in school need not map into inferior later life outcomes. Pischke (2007) uses reforms in West Germany in the 1960s that changed the length of the school year – reducing weeks in school for students in some states by 26 weeks over two years - without directly changing their years of completed schooling. Despite those with less instruction time having higher levels of primary school year repetition and being less likely to attend higher level secondary school streams, he finds no adverse impact on later labour market outcomes such as employment and earnings. Of course, these shorter school years were planned and would have been

accompanied by other organisational changes, so may not be easy to compare with unexpected enforced closures like those from Covid-19 lockdowns.

Online teaching and learning from home

During school closures, teaching may have continued in other forms. The availability of online learning platforms provides a way by which schools can substitute classroom instruction for instruction at home. There is currently no national policy on how schools should provide instruction while children remain at home and different schools will have different capacities to instruct children remotely. The OECD Programme for International Student Assessment (PISA) data provides a way to gauge how well schools can switch between classroom instruction and online learning. There are number of questions in PISA, asked of both students and principals, regarding the use of technology in a classroom setting. The question that comes closest to asking whether teachers will be able to use computers to instruct students remotely, is whether an online learning support platform is available. OECD (2020) analysis of the 2018 PISA data shows that around 65% of students in respondent UK secondary schools have access to online learning platforms. However, there is a steep socioeconomic gradient to this access. When looking at economically disadvantaged students, access falls to just over 40%. This is alarmingly low considering that over 70% of their more advantaged peers are reported to have the same access.

Even if students cannot work remotely, is it possible that parental instruction can substitute for time spent working in school. It has long been recognised by economists that parents will adjust educational expenditure and instruction time in response to the amount of educational inputs received elsewhere (Todd and Wolpin, 2003). Not only this, but parental instruction is estimated to be especially effective in raising attainment. Fiorini and Keane (2014) analyse time-use data in Australia and suggest that among activities on which children can spend time, time with parents on educational activities is the most effective at increasing cognitive skills. Houtenville and Conway (2008), look at a number of measures of parental effort and see how they correlate with attainment. Their findings suggest that parental effort is correlated with their children's attainment. This statistical relationship persists after controlling for a rich set of parental background characteristics, so does not appear to come from more affluent parents, with higher achieving children, putting in more effort. In a similar vein to OECD findings, both papers find a socioeconomic gradient with respect to instruction time with more educated parents spending more time with their children in

educational activities. On top of this, parents with more financial resources will certainly be better able to pay for online private tuition, from the wide range of services available from websites and tutoring agencies (Sutton Trust 2020). Evidence on the gaps that emerge between children during summer holidays also suggests that children with fewer parental resources will lose out during extended periods of closure (Cooper et al 1996).

Making up the achievement deficit

If the Covid-19 school closures do affect achievement, what can be done about it once schools re-open and what will it cost to make up the achievement deficit? The direct cost of the lost teaching inputs in the state sector alone is high at around £1 billion per week, given spending on state schooling in England is around £50 billion per year. What can be done to compensate?

Some options are already being put forward, including repeating entire years, though such an approach would be quite extreme, depending on how long schools remain closed.¹

An obvious low-cost solution would be to cancel the summer holidays and make teachers and students work throughout the summer to make up lost time, but such a move is unlikely to be popular with either teachers, parents or children.²

One more plausible alternative is to increase instruction time by extending hours on regular school weeks. How effective would such a strategy be? A number of studies have looked at changing instruction time on the ‘intensive margin’ in this way. Lavy (2015) uses international achievement data (PISA) to assess the link between subject specific instruction time and performance for 15-year olds. He finds that an additional hour per week, over the course of a school year, increases test scores by around 6% of a standard deviation, although there are diminishing returns to adding even more hours to each week. On that basis (and given the results on school closures discussed above), well over two additional hours per week might be needed over a year to compensate for each week lost to Covid-19. Less might do in England, since effects are bigger for developed countries with more ‘autonomous’ school systems, like that of England’s academy schools. Rivkin and Schiman (2015), extend Lavy’s study to assess the extent to which returns vary by classroom environment, finding that, perhaps unsurprisingly, that benefits differ by quality of the classroom environment.

¹ <https://www.tes.com/news/coronavirus-gcses-repeat-year-says-wilshaw>

² <https://www.thetimes.co.uk/article/school-summer-holidays-should-be-cut-to-four-weeks-hb0ckp098>

These findings suggest that schools would need to add back many more marginal hours within existing weeks in the school calendar, to compensate for blocks of time lost through closures. Again, this strategy is likely to benefit those already in better schools.

Another approach is to increase resources to schools to try to increase effectiveness without necessarily increasing instruction time. But there are mixed findings in the literature on the effectiveness of increasing school expenditure, with older studies finding limited impact. More recent studies looking at specific grants and funding gaps are more positive. The results in the most relevant study, Gibbons, McNally and Viarengo (2018) looking at funding differentials in England's primary schools, suggest it would take £1350 extra funding per pupil in a year to raise achievement by around 10% of a standard deviation. On that basis it would cost about £3.4 billion just to get the four cohorts of children in Key Stage 2 (age 7-11) back on track if they fell back by, say, 0.2 standard deviations as a result of a four-week shut down.

Final words

In conclusion, the best available evidence from the economics of education shows that, at least in the short run, the closure of schools is likely to impact on student achievement and the costs of putting this right are likely to be high. And this is before we start to think about the impacts of lockdown on children over and above school achievement, for example, on their mental health and physical health. Or the impacts from disruption to exams and progression to higher levels of education. There may be some benefits too, if a switch to online education encourages greater interaction with technology and more efficient teaching practice, but these benefits are as yet unknown and unquantifiable. It is also clear that children from more advantaged backgrounds attending schools where technology is in place to substitute for classroom teaching, and whose parents have both the time and skills to plug the deficit, are likely to be less adversely affected.

But instruction time is only one part of a larger picture. The economic burden faced by parents – both in terms of job loss and falls in income - will also affect the nation's children and will do so in an unequal manner. Ruiz-Valenzuela, 2015 and Rege et al. 2011 document the negative impact of job loss on attainment, while Dahl and Lochner, 2012 look at parental income changes and test scores. The total impact is likely to open up an even greater chasm between those attending outstanding schools, and who have access to parental resources, and those who are not so lucky.

References

- Baker, M. (2013). Industrial Actions in Schools: Strikes and Student Achievement. *The Canadian Journal of Economics*, 46(3), 1014–1036.
- Belot, M., and Webbink, D. (2010). Do Teacher Strikes Harm Educational Attainment of Students? *LABOUR*, 24(4), 391–406.
- Card, D (2001) ‘Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems’ *Econometrica*, 69(5), 1127-1160
- Cooper H., Nye B., Charlton K., Lindsay J., Greathouse S. (1996). The Effects of Summer Vacation on Achievement Test Scores: A Narrative and Meta-analytic Review. *Review of Educational Research*, 66(3), 227–268.
- Dahl, G & Lochner, L (2012) ‘The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit’ *American Economic Review*, 102(5), 1927-56.
- Fiorini, M and Keane, M (2014) ‘How the Allocation of Children’s Time Affects Cognitive and Noncognitive Development’ *Journal of Labor Economics*, 32(4), 787-836.
- Gibbons, S., S. McNally and M. Viarengo (2018) Does Additional Spending Help Urban Schools? An Evaluation Using Boundary Discontinuities, *Journal of the European Economic Association*, 16(5) 1618–1668
- Goodman, J. (2014). Flaking Out: Student Absences and Snow Days as Disruptions of Instructional Time. Working paper 20221. NBER Working Paper Series. Cambridge.
- Houtenville, A and Conway, K (2008) ‘Parental Effort, School Resources, and Student Achievement’ *The Journal of Human Resources*, 43(2), 437-453
- Johnson, D. R. (2011). Do Strikes and Work-to-Rule Campaigns Change Elementary School Assessment Results? *Canadian Public Policy / Analyse de Politiques*, 37(4), 479–494.
- Lavy, V (2015) ‘Do Differences in School’s Instruction Time Explain International Achievement Gaps? Evidence from Developed and Developing Countries’ *Economic Journal*, 125(88), 397-424.
- Monteburano, P. (Forthcoming). ‘Disrupted Schooling: Impacts on Achievement from the Chilean school occupations’, CEP Discussion Papers, Centre for Economic Performance, London School of Economics and Political Science.
- OECD (2020) ‘Learning Remotely when Schools Close: How Well Are Students and Schools Prepared? Insights from PISA’ https://read.oecd-ilibrary.org/view/?ref=127_127063-iiwm328658&title=Learning-remotely-when-schools-close
- Pischke, J-S (2007) ‘The Impact of Length of the School Year on Student Performance and Earnings: Evidence from the German Short School Years’ *Economic Journal*, 117, 1216-1242

Rege, M, Telle, K, and Votruba, M (2011) 'Parental Job Loss and Children's School Performance' *The Review of Economic Studies*, 78(4), 1462–1489.

Rivkin, S and Schiman, J (2015) 'Instruction Time, Classroom Quality, and Academic Achievement' *Economic Journal*, 125(88), 425-448

Ruiz-Valenzuela, J (2015) 'Job Loss at Home: Children's School Performance During the Great Recession in Spain' CEP Discussion Paper No 1364, Centre for Economic Performance, LSE.

Sutton Trust (2020) Covid-19 Impacts: School Shutdown. <https://www.suttontrust.com/our-research/covid-19-and-social-mobility-impact-brief/>

Todd, P and Wolpin, K (2003) 'On the Specification and Estimation of the Production Function for Cognitive Achievement' *Economic Journal*, 113(485), 3-33.

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