

Impact of Covid-19 on attainment: initial analysis

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The Bigger Picture: Are your *Progress Test Series* and *New Group Reading Test* scores typical following the disrupted learning of 2020?

The impact of Covid-19 on learning in schools has been the subject of much speculation and research. This paper represents our initial findings from data derived from our *Progress Test Series* in English, maths and science and the *New Group Reading Test*, and is the first part of our journey to understand the impact of Covid-19 on our children's learning. We will have to take a much longer-term view to draw any firm conclusions on the lasting effects of extended periods of remote learning. However, we hope you find the first snapshots of use as you support your pupils over the coming weeks and months.

From what we are seeing so far, there are reasons for optimism. The huge efforts schools made to support their learners through the upheaval of the first lockdown seem to have paid off in key areas. We see a limited impact on reading, for example, and pupils on Free School Meals* don't seem to have been affected much more than their peers in the core subjects. However, there is a clear need for swift action to address the slide in maths and science attainment.

We hope that this analysis will be helpful for schools to understand what they are seeing in their own data in the context of the wider picture of schools across the UK and overseas. We will be able to draw firmer conclusions about where exactly the Covid-19 effect is most entrenched and where schools have had the most impact in supporting learners as we continue to analyse test results over the coming months and years.

*We derived cut points to split England state schools into three equal groups: low economic deprivation schools have 0-8% of their students receiving FSM; medium deprivation schools have 8-17%; and high deprivation schools have over 17%.

Methodology

The main score we use in our digital attainment tests – both the *Progress Test Series (PT Series)* and the *New Group Reading Test (NGRT)* – is called the ‘standard age score’ (SAS). Student attainment is benchmarked to a norm group of performances from children of the same age who are representative of the UK student population.

A child whose level of attainment is where we would expect, given this norm group and age expectations, is given a score of 100 (with standard deviation of 15). Scores above 100 suggest a level of attainment above age expectations, and scores below 100 suggest a level of attainment below age expectations.

We looked at test scores from three periods:

2018: 1 May 2018 to 31 July 2018

2019: 1 May 2019 to 31 July 2019

2020: 1 September 2020 to 31 October 2020

The *Progress Test Series* is usually taken by thousands of children towards the end of the academic year (May-June). This became difficult in 2020, so schools postponed the assessments children would have sat in the summer to September and October when they were physically back in school. Table 1 shows the numbers of students that were included in cohort 1 (2018-2019) and cohort 2 (2019-2020). For the purposes of this analysis schools were matched within each cohort to ensure comparability.

	Cohort 1		Cohort 2	
	2018	2019	2019	2020
PTM	281,245	311,293	198,740	152,786
PTS	91,663	103,876	70,827	55,947
PTE	250,037	268,652	178,945	137,661
NGRT	138,092	145,343	102,052	57,836

Table 1 Number of students in each cohort sample

Main findings

In a normal year, without the impact of Covid-19, we would expect little variation from the mean score of 100 within a population. Any difference in scores greater than 3 SAS points is deemed as significant when considering such large datasets.

As a baseline comparison, schools in the UK that took assessments in 2018 and 2019 show a minimal variation in scores. Table 2 highlights in yellow where the SAS difference was greater than 3 SAS points.

School type	PTM		PTS		PTE		NGRT	
	2018 to 2019	2019 to 2020	2018 to 2019	2019 to 2020	2018 to 2019	2019 to 2020	2018 to 2019	2019 to 2020
England State Primary	-0.6	-6.6	-0.8	-5.5	-1.0	-3.4	0.5	-1.9
England State Secondary	0.5	-4.0	0.5	-3.0	-1.0	-2.9	0.6	-0.5
England Independent	0.3	-2.6	-0.3	-5.3	0.1	-2.7	0.2	-2.1
Northern Ireland	-0.1	-3.4	1.1	-2.2	-0.3	-2.4	-0.1	-3.7
International Schools	2.3	-4.9	3.3	-6.2	2.1	-3.0	-0.4	-0.1

Table 2: PT Series – maths, science and English – and NGRT average score differences by school type

This shows that:

- On average, school attainment has fallen across all subjects. Some schools have registered a rise in their mean score, but this is rarer in 2020 than in 2019
- Although scores differ from year to year, the distribution has shifted to such a degree that more schools are seeing drops in their mean scores in 2020, while the average school is expected to have a lower mean in 2020 than in 2019
- Maths (PTM) and science (PTS) scores declined most between 2019 and 2020
- English (PTE) and reading (NGRT) were less affected, with much smaller SAS declines
- In England, primary schools were more affected than secondary schools across all subjects
- Independent schools were less impacted overall
- International schools (those outside of the UK) saw similar declines to those observed in England
- Girls were more affected than boys. Boys usually perform better than girls in maths, but during the pandemic this gap has widened further. Conversely, girls usually perform better than boys in English and reading, but this year the gap has narrowed. No gender difference was observed in science

- Schools with a lower proportion of children with Free School Meals (FSM) were more affected than schools with higher FSM. This was the reverse for English. At student level the difference between students with FSM and those without was not significant.

Subject breakdown

Figures 1-4 show how much of an increase or decrease was observed year to year in school mean SAS comparing 2018 to 2019 (the blue line) and 2019 to 2020 cohorts (the red line).

We would expect some variation in a school's mean scores from year to year, though less variation by school than by student. Some school mean scores will rise, others will fall; but the majority would normally register changes near zero.

Changes of 10 SAS points or more are typically rare. But the scores comparing 2020 to 2019 have shifted to the left of zero to such an extent that more schools now register changes of 10 SAS points or more.

Although some schools have witnessed an improvement in their mean scores, fewer have done so than in the year before, which means the distribution overall has shifted to the left of zero. If Covid-19 had not had an impact, then the red line in the graph below would have the same distribution as the blue line.

Maths

Maths has been the hardest hit subject so far in the pandemic (see Figure 1), with a significant decrease in mean SAS scores. Primary schools witnessed a drop in their mean SAS score of -6.6, with secondary schools falling by -4.0 SAS points. Independent schools were least affected.

Schools with high levels of FSM were affected less than those with low FSM (the gap therefore narrowed). But overall, at a student level, FSM students were as affected as their non-FSM peers. Girls on average were more affected than boys.

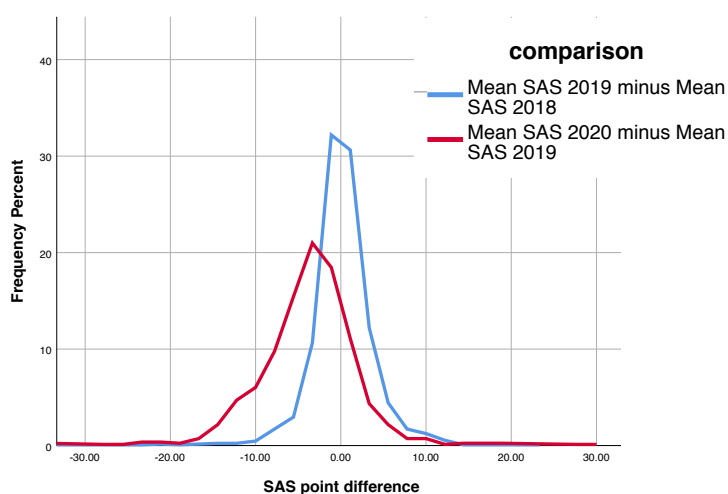


Figure 1: School mean SAS change in maths

Science

Science has been affected almost as much as maths (see Figure 2). Primary schools again have registered the biggest impact, with a drop of -5.5 SAS points. Secondary schools were less affected with a decrease in SAS score of -3.0, though independent and international schools saw bigger declines, -5.3 and -6.2 respectively.

As with maths, schools with higher FSM were less affected than schools with low proportions of FSM. The gap still persists but it is less pronounced. At an individual student level there was little variation by either gender or by FSM status.

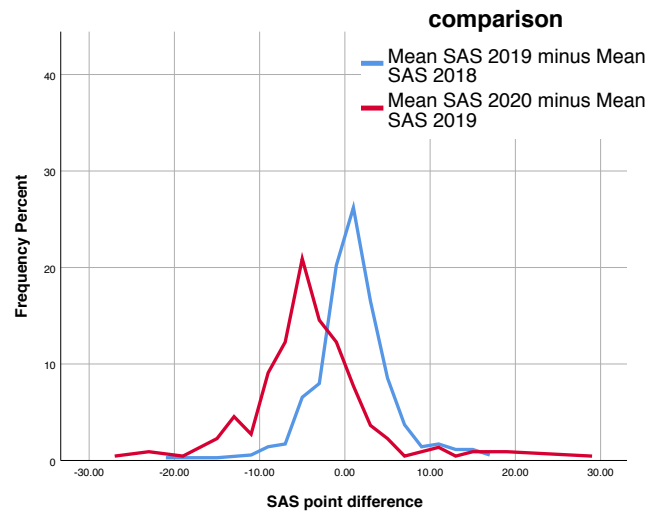


Figure 2: School mean SAS change in science

English and reading

English has been the least affected subject overall (see Figure 3) and the changes in reading scores have been even less pronounced (Figure 4). Primary schools witnessed a fall in English of -3.4 SAS points, while secondary schools' scores declined by -2.9. Declines in reading scores in both primary and secondary were less evident, with falls of -1.9 and -0.5 respectively.

However, unlike in maths and science, English schools with higher levels of FSM were more affected than those with low FSM.

At a student level, the SAS scores of FSM students declined more than those of their non-FSM peers. Girls were affected more than boys.

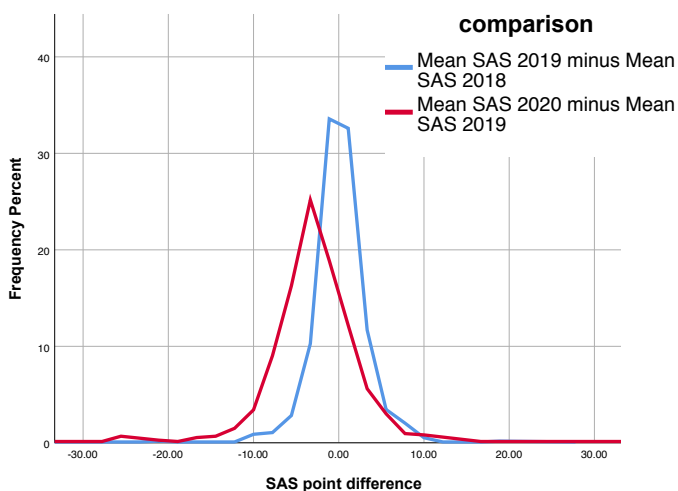


Figure 3: School mean SAS change in English

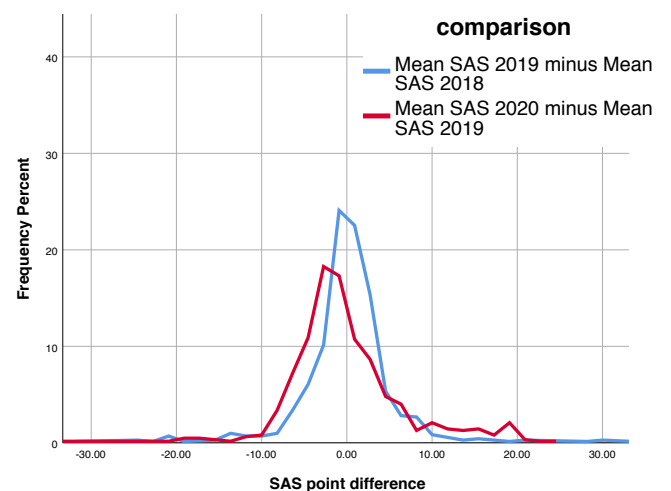


Figure 4: School mean SAS change in reading (NGRT)

What does this mean for your school?

The above data provides a view of the large-scale trends across schools that tested in autumn 2020. The findings may therefore differ from the data in your own school and that of individual cohorts and groups. What is most important is to understand the SAS scores in your school.

To that end, there are five key questions you should ask of your own data:

1. Do you see a similar trend in your school compared to the findings above? Comparing your data to the national benchmark will allow you to see how your school has adapted during the pandemic in comparison to others.
2. How does your data compare with other assessment data you have about each student? This will help you triangulate what you know about each student.
3. What does the data look like by key groups and at an individual/curriculum level? Mean score ranges have widened, which means there is a risk of more students falling behind. Use the curriculum analysis in individual and group reports to understand what is going on in more detail.
4. Can you identify areas of comparative success? These will allow you to celebrate and share best practice internally. Use the curriculum content analysis to identify gaps or successes at cohort level and to support future curriculum planning.
5. Can you separate short-term impacts on student scores from longer-term patterns? The latter may need further investigation with follow-on assessments on reading, for example.

If you have any further questions about your data, we're here to help. Please contact us on **0330 123 5375** or email us at **assessment.insights@gl-assessment.co.uk**.

This report and analysis were carried out by the Research and Statistics Team at GL Assessment. With thanks to Bernadetta Brzyska, Cres Fernandes and Tom Gallacher.

Bernadetta Brzyska

As Head of Research, Bernadetta is responsible for developing new and innovative ways for schools to use assessments in the UK and overseas. Bernadetta has worked in education for over 13 years but her main experience in education research stems from six years at the National Foundation for Educational Research, working on developing assessments, national evaluations and international surveys. She has also worked for several years in Hong Kong for schools chain Nord Anglia Education as its Research and Data Manager.



Cres Fernandes

Cres is a professional statistician with over 20 years' experience in assessments data. As Head of Statistics, he has been involved in developing most of the assessments produced at GL Assessment. Before he joined GL Assessment, Cres was a senior statistician at the National Foundation for Educational Research for 12 years, where he was responsible for the analysis of England's contribution to the Trends in International Maths and Science Study (TIMSS) involving over 50 countries.



Tom Gallacher

Tom Gallacher MA MSc MBPsS is a statistician at GL Assessment. He works on the standardisation and validation of many of our standardised assessments, as well as data projects in the UK and globally. His research interests include validity and curriculum, with a special interest in the applications of Rasch models.



