SUMMARY

NRT Annual Statement 2020

ofqual

Introduction

In February/March 2020 nearly 13,500 year 11 students from over 330 schools took the fourth annual National Reference Test (NRT) in English and maths, which is administered by NFER. We are grateful to all those schools and students that took part this year.

The tests are designed to provide evidence on the performance of 16-year-old students in English language and maths. The first live NRT, taken in 2017, was benchmarked against the first awards of the reformed GCSEs in English language and maths, and subsequent tests compare the performance of students with those in 2017.

Results are reported at three grade boundaries – grade 7, grade 5 and grade 4. Results are reported as expected percentages of students achieving those grades (and above) based on changes in performance on the NRT.

As in 2019, this report focuses only on grades 7 and 4, since these are normally the key grade boundaries that are set using a combination of statistics and expert judgment.

The 2020 context

In March 2020, the Secretary of State announced that exams would be cancelled to help fight the spread of coronavirus (COVID-19). The NRT had already taken place and was unaffected by the pandemic and subsequent school closures. So that students could move on to the next stage of their lives, the Secretary of State asked us to work with exam boards to issue calculated grades that best represented the grades that students would have achieved if teaching and learning had continued and students had taken their exams.

In normal circumstances, GCSE awarding is guided by statistical predictions based on the prior attainment of the cohort, with input from senior examiners looking at the quality of students' work and comparing it to work in previous years. NRT results provide an additional source of evidence in the awards for GCSE English language and GCSE maths.

If exams had taken place this summer, for GCSE English language and maths, we would have considered whether the NRT evidence was sufficient to justify an adjustment to the prior attainment-based predictions used by exam boards in awarding.[1]

On balance, for 2020 we judged that the fairest approach was to consider the NRT evidence as usual this summer, and if there was sufficient evidence to make an adjustment, then we would make the adjustment to the national predictions that will be used as part of the statistical standardisation process. This approach was endorsed by the Ofqual Board in June 2020.

[1] For more detail about how that would work, see: https://ofqual.blog.gov.uk/2019/05/03/using-nrt-evidence-this-summer/

Results for 2020

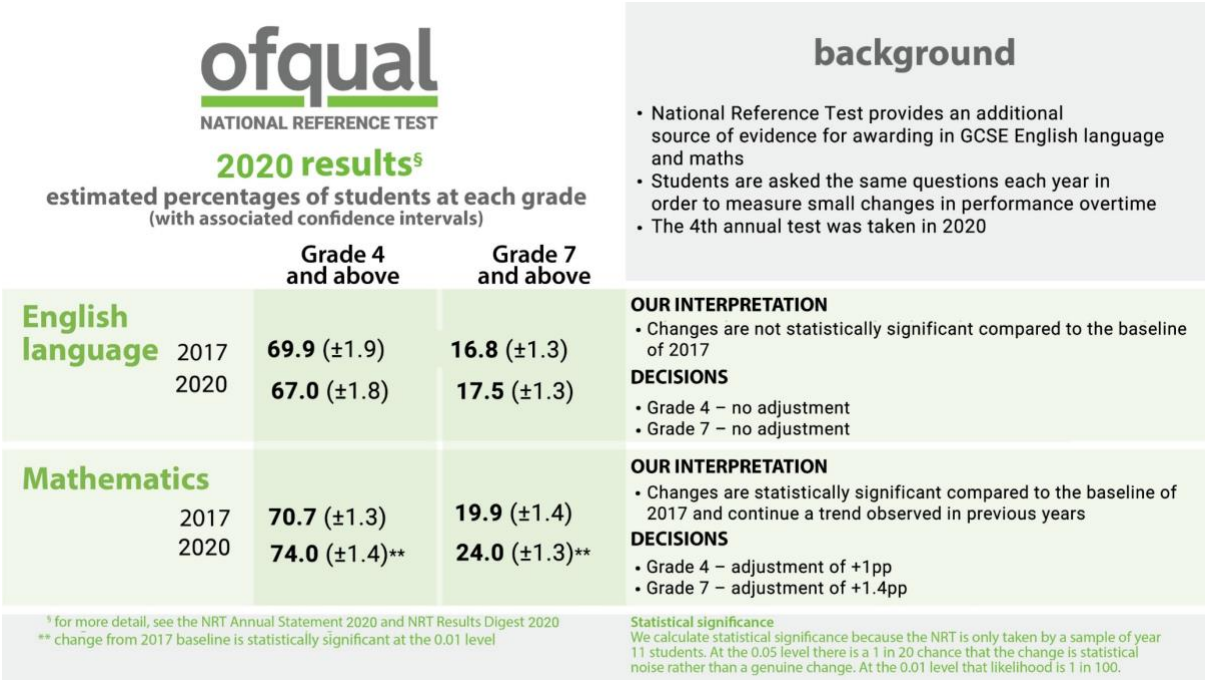
The results are shown below. Because this test uses a sample of students, we report 'confidence intervals' around the results. These confidence intervals represent the possibility that if we had taken a sample of different students, and each student had taken a different subset of questions, we would get a slightly different result.

The diagram below shows the changes in the expected percentage of students at the grade 7 and grade 4 boundaries, compared to 2017.[2]

In English, NFER report that the changes compared to 2017 are not statistically significant.

In maths, NFER report a statistically significant upward change at grade 7 and grade 4, which suggests that student performance has improved slightly. This continues a trend seen in 2019 and is also in line with PISA 2018 results for England,[3] which tested students in the same cohort as those who took this year's NRT, that is, students in year 11 in the academic year 2019/20.

The diagram below shows the results in 2017 and 2020, as well as the confidence intervals around those figures. Although the percentage of students at those grades in 2017 is fixed, the confidence intervals reflect the reported precision of the 2017 NRT results. The diagram also shows our decisions in relation to each of the grades in GCSE English language and maths.



Using the NRT evidence in awarding

We have always been clear that we would not consider NRT evidence in GCSE awarding before 2019, because any improvement before then was likely to be due to

[2] NFER also report at grade 5 but since it is currently not a 'key' grade boundary, it would not normally be subject to an adjustment,

[3] https://www.gov.uk/government/publications/pisa-2018-national-report-for-england

the sawtooth effect, as teachers get used to the new GCSEs. In 2019 we did not make any adjustment to GCSE English language or maths.

This summer, having decided that we would consider the NRT evidence as in any other year, we discussed the results with exam boards in June, before deciding whether to make any adjustments to GCSEs in English language and maths.

In considering the evidence from the NRT, we bear in mind the principles that:

- our decisions are consistent over time and between subjects, regardless of the direction of any change
- we take account of contextual evidence from the student survey and other sources, and that we act cautiously in making any adjustments to grade standards
- we document and publish the reasons for our decisions

In order to help us interpret the NRT results, we carry out additional analysis to consider the prior attainment profile of the sample of students who take the test. We also consider the findings from the student survey in relation to student motivation and students' views of the importance of the NRT and GCSE in English language or maths.

Prior attainment profile of the sample

In both English and maths, the achieved sample – that is, those students who took the test as opposed to all those who were selected to take part – has an upward bias in terms of prior attainment, demonstrated by the difference in the Key Stage 2 profile of the drawn and achieved samples. This is not, in itself, problematic. This difference was also seen in 2017, 2018 and 2019, and this bias has remained stable across the four years of the NRT. There is, therefore, no reason to believe that the bias in the achieved sample is having any material impact on the changes in results between 2017 and 2020.

Student motivation

Immediately after taking the NRT, students also take a short survey to capture, among other things, their NRT-specific test motivation, preparation for GCSEs, and motivation, feelings and attitudes about learning the relevant GCSE subject. The aim of the survey is to provide context for any changes in NRT results. The survey was introduced in 2017 and was also administered in 2018, 2019 and 2020.

For the English test, students reported less test-taking effort, lower perceived importance of the NRT, greater indifference to own NRT performance, less test preparation, lower perceived utility value and importance of the subject and less desire for further study and professional use of the subject, in 2020 compared to the baseline year of 2017. They also reported receiving more teaching hours but less combined language/literature teaching. Based on the relationship in previous tests between test results and survey responses, these small changes might be expected to produce slightly lower NRT results in 2020 compared to 2017. These factors need to be considered when interpreting the NRT results and might lead us to question whether the changes in NRT results would be reflected in GCSE performance.

In maths, students reported lower perceived importance of the NRT, greater indifference to own NRT performance, less test preparation, and lower perceived utility value of the subject, but increased enjoyment of the subject, in 2020 than in 2017. None of these changes would lead us to expect any changes in maths results, given previous relationship between survey results and test results, so it does not appear that the change in test results are due to changes in student attitudes.

Interpreting the results

In interpreting the results from this year's NRT, we have previously considered the threshold we should use for determining statistical significance. NFER report statistical significance at the 0.05 and 0.01 levels, and we decided in 2019 that we would focus on the 0.01 level, due to the high stakes nature of the test and GCSE results.

Our rationale is set out in more detail in Annex 1 in the 2019 Annual Statement.

English

Having considered the evidence and the principles set out above, there is no evidence that would support an adjustment to GCSE outcomes. The changes reported from 2017 are not statistically significant, which means that it is entirely possible that the differences occur by chance, rather than reflecting a 'real' change in student proficiency.

Maths

Having considered the evidence and balanced the principles set out above, we believe there is a sufficiently strong case for making an adjustment at grade 7 and grade 4 in maths in 2020. The evidence we have on the size and duration of any sawtooth effect is consistent with the idea that the ongoing improvement seen in 2020 is likely to be over and above what we might have expected from a sawtooth effect beginning in 2017. Therefore, we decided to make an adjustment in maths of +1.4pp at grade 7 and +1.0pp at grade 4 for 2020.

To help us decide on the size of the adjustment, we carried out a trend analysis. A statistically significant upward trend across the four years tells us that the four years of NRT maths data can reasonably be summarised as showing a steady increase in student performance. The trend modelling suggests that the proportion of students attaining grade 4 and grade 7 in maths has increased by 1.015pp and 1.372pp, respectively, every year from 2017 to 2020.

Making an adjustment this year is operationally different from other years. In normal circumstances, we would adjust the prior attainment-based predictions used by each exam board. However, for 2020 we applied the adjustment to the national prediction used in the statistical model to be used to standardise grades across all centres. For grade 9, we used the tailored formula that was used in 2017 to set grade 9 in the first year of reformed GCSE maths.[4] This results in a small upwards adjustment to the proportion of students achieving grade 9. Because there are no grade boundaries being set for 2020, we also had to make proportionate adjustments at grades 8, 6 and 5, and also at grades 3 and 2. In a normal year, these would be arithmetic grade boundaries set at equi-distant marks between the key grade boundaries.

[4] See https://ofqual.blog.gov.uk/2017/04/05/setting-grade-9-in-new-gcses/

The adjustment was therefore applied and used to generate students' calculated grades. However, on 17 August we announced that students would receive the higher of the centre assessment grade (CAG) or the calculated grade.[5] In many cases the calculated grade will be higher than the CAG because the evidence from the statistical standardisation suggests that the school's judgements were a little severe, but in other cases it is likely to be a result of the small adjustment applied to the statistical predictions. Therefore, we believe that the adjustment has been taken into account and will be reflected in the grades issued to students this summer.

Further information

There is more information about the NRT in the Background Report and NFER Results Digest.

5 https://www.gov.uk/government/news/statement-from-roger-taylor-chair-ofqual

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ofqual

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20 August 2020

Ofqual/20/6661/1