# The Importance of Early Literacy

In February of this year, the Government announced a target in its [Levelling Up White Paper](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052708/Levelling_up_the_UK_white_paper.pdf) of 90% of pupils reaching the expected standard in reading, writing and maths at Key Stage 2 by 2030. This target is framed as ‘eliminating illiteracy and innumeracy by 2030’.

This compares to 65% in 2019, the latest year in which assessments took place prior to the pandemic.

Attainment at Key Stage 2 is strongly associated with attainment at Key Stage 1. As the chart below shows, the percentage of pupils who achieved the expected standard in reading, writing and maths at Key Stage 2 increased in line with Key Stage 1 literacy scores.



90% of pupils who had achieved a Key Stage 1 literacy score of 9 (which we explain below) achieved the expected standard in reading, writing and maths at Key Stage 2. However, fewer than 30% of pupils nationally had achieved this standard by the end of Key Stage 1.

It could be argued then that achieving the 90% KS2 target will depend to some extent on improving literacy at KS1 and earlier. This will reduce the number of pupils starting Key Stage 2 already behind age-related expectations.

In this article, we summarise how we have calculated Key Stage 1 literacy scores. We then examine how attainment at Key Stage 2 and GCSE is associated with basic pupil demographic characteristics (gender, disadvantage and month of birth) and Key Stage 1 literacy scores.

### The relationship between early literacy and GCSE English language

In [a previous blogpost](https://ffteducationdatalab.org.uk/2020/11/the-relationship-between-early-literacy-and-gcse-english-attainment/) we also examined the relationship between KS1 literacy scores and the probability of achieving grade 4 or higher in GCSE English language in 2018.

In the chart below, we have updated this work so that it is based on the 2019 Key Stage 4 cohort, the last cohort to take GCSE examinations prior to the pandemic.



61% of pupils in state-funded schools who achieved a KS1 literacy score of 5 went on to achieve grade 4 or higher in GCSE English language. This figure increased to 80% among those who achieved a KS1 literacy score of 7.

We chose 5 as a basic threshold because more than 50% of pupils who achieved this standard went on to achieve Grade 4 or higher in GCSE English language and this was the case among eight key groups of pupils we identified based on gender, disadvantage and first language (English/ other).

We also chose 7 as a strong threshold because at least 70% of pupils in all eight groups went on to achieve grade 4 or higher in GCSE English language.

### What are literacy scores at Key Stage 1?

The vast majority of the 2019 KS4 cohort were assessed at Key Stage 1 in 2010 using National Curriculum levels, which were replaced by the current set of tests and teacher assessments in 2016.

The two sets of assessments are not directly comparable. However, we created a rough approximation which works by converting the teacher assessment levels in reading and writing into scores.

This is done for pre-2016 teacher assessment levels [1] and for the new (less granular) standards currently used [2].

For presentational purposes, we band the scores from both the old and new using the following look-up table. The score of 5.2 in the new assessments (expected standard in one of reading or writing and working towards the expected standard in other). This is a slightly lower standard than level 2B in both reading and writing under the old system (a score of 5.4).

|  |  |  |
| --- | --- | --- |
| Assessments | Decimal Score | Whole Number Score |
| New (2016-) | 0 | 0 |
|  | 1.8 | 2 |
|  | 2.8 | 3 |
|  | 3.8 | 4 |
|  | 5.2 | 5 |
|  | 6.6 | 7 |
|  | 8.3 | 9 |
|  | 10.0 | 10 |
| Old (pre 2016) | 0 | 0 |
| 2.2 | 2 |
| 3.0 | 3 |
| 3.8 | 4 |
| 4.6 | 5 |
| 5.4 | 6 |
| 5.6 | 6 |
| 6.4 | 7 |
| 7.4 | 8 |
| 7.7 | 8 |
| 8.7 | 9 |
| 10.0 | 10 |

The chart below shows the percentage of pupils achieving a score of 5+ and a score of 7+ for each year between 2014 and 2019. In an ideal world, we would see less perturbation between 2015 and 2016. However, this is the best we could manage given the lack of granularity in the data.

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### What are literacy scores at Key Stage 2?

The vast majority of the 2019 KS4 cohort were also assessed using National Curriculum levels at the end of Key Stage 2 in 2014.

As at Key Stage 1, a new set of assessments were introduced in 2016. Rather than measuring test scores using fine grades, the new tests use [scaled scores](https://www.gov.uk/guidance/understanding-scaled-scores-at-key-stage-2).

We created a set of look-up tables to convert old and new test scores in reading and grammar, punctuation and spelling (GPS) into literacy scores. These are shown in the table below. We use a different conversion for 2016 to attempt to avoid seeing [a sharp rise in attainment following the introduction of a new set of tests](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936339/What_is_the_Sawtooth_Effect.pdf).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subject | Score | Pre-2016 (fine grades) | 2016 (Scaled scores) | 2017 (Scaled scores) |
| Reading | 0 | 3 to 17.9 | <=86 | <=86 |
|  | 1 | 18 to 24.9 | 87 to 94 | 87 to 94 |
|  | 2 | 25 to 26.9 | 95 to 98 | 95 to 99 |
|  | 3 | 27 to 29.9 | 99 to 103 | 100 to 105 |
|  | 4 | 30 to 31.9 | 104 to 109 | 106 to 109 |
|  | 5 | >=32 | >=110 | >=112 |
| GPS | 0 | 3 to 17.9 | <=88 | <=88 |
|  | 1 | 18 to 22.9 | 89 to 96 | 89 to 96 |
|  | 2 | 23.0 to 27.7 | 97 to 100 | 97 to 101 |
|  | 3 | 27.8 to 31.4 | 101 to 105 | 102 to 107 |
|  | 4 | 31.5 to 33.7 | 106 to 111 | 108 to 112 |
|  | 5 | >=33.8 | >=112 | >=113 |

KS2 literacy scores are the sum of the reading and GPS scores. These are shown for 2014 to 2019 in the chart below.

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### The importance of context

Not only is achievement in GCSE English associated with KS1 literacy scores, it is also associated with pupil context.

In the table below, we show the percentage of pupils who achieved grade 4 or higher in GCSE English language in 2019. We have divided pupils into eight groups based on gender, disadvantage [3] and term of birth. We could have added other factors (e.g. ethnicity or first language), however we have limited the table to just these three factors for simplicity of presentation.



This shows that 39% of summer-born, disadvantaged boys achieved grade 4 or higher compared to 84% of autumn-born not disadvantaged girls.

We have included in Supplementary Tables A below a breakdown of KS1 and KS2 literacy scores in 2019 by pupil group using the same characteristics. These show a similar picture to Key Stage 4.

The 2019 results at KS1, KS2 and KS4 cover three separate birth cohorts. However, we can also analyse attainment at all three Key Stages for the cohort who completed Key Stage 4 in 2019. This is summarized in the chart below for all pupils, summer-born disadvantaged boys and autumn-born not disadvantaged girls. Data for other groups can be found in the Supplementary Tables B. We only include pupils for whom we have attainment data at all three Key Stages. As the measure of disadvantage can change over time, we use the measure from the end of Key Stage 1 [4].



Overall, 27% of pupils fell below the KS1 literacy threshold of 5, 25% below the KS2 literacy threshold of 5 and 30% below the GCSE threshold of grade 4.

Among the Autumn-born not disadvantaged girls, just 12% fell below the KS1 literacy threshold, 14% below the KS2 literacy threshold and 16% below the GCSE threshold.

However, the pattern among summer-born disadvantaged boys is somewhat different. 59% fell below the KS1 literacy threshold and 62% below the GCSE threshold. However, a much lower percentage (43%) fell below the KS2 literacy threshold.

There are two possible reasons for this. The first is that the attainment gap between disadvantaged pupils and their peers tends to widen during Key Stage 4. The second is that the Key Stage 1 literacy measure is based on reading and writing whereas the Key Stage 2 measure is based on reading and GPS. Relative to girls, boys tended to do slightly better in GPS tests compared to writing tests at Key Stage 2.

However we measure it, summer-born disadvantaged boys are over-represented in the group of pupils who do not achieve at least a score of 5 at Key Stage 1. Therefore any efforts to improve Key Stage 1 literacy will need to be effective for this group.

### Will improving Key Stage 1 literacy lead to improvements at Key Stage 2 and GCSE?

The honest answer to this question is that we don’t really know.

On the one hand, improving Key Stage 1 literacy should lead to more pupils having the literacy skills to access the Key Stage 2 curriculum which in turn should lead to more pupils having the literacy skills to access the Key Stage 3 (and then Key Stage 4) curriculum.

But to some extent it also depends on a) approaches taken by the Standards and Testing Agency (at Key Stage 2) and Ofqual (at GCSE) to maintaining grading standards over time and b) whether the assessments (at KS1 and KS2) are valid measures of literacy.

At GCSE, Ofqual uses an approach called [comparable outcomes](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/666765/Inter-board_comparability_of_grade_standards_in_GCSEs__AS_and_A_levels_2017_.pdf) to try to maintain standards over time. Its use has led to some, perhaps unfairly, [criticizing it for “failing” (achieving grade 4 or lower) a third of pupils by design](https://www.ascl.org.uk/ASCL/media/ASCL/Our%20view/Campaigns/The-Forgotten-Third_full-report.pdf).

Comparable outcomes is made up of two stages: statistical predictions and other evidence. The statistical predictions assume that results in GCSE English language remain the same as the previous year [5]. Without any other adjustments, this would result in fixed percentages of pupils achieving each grade each year (and roughly a third would fall short of grade 4).

However, this is only the first step in the process. Other forms of evidence, including the [National Reference Test](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1018845/NRT2022_Information_for_Schools__SOS_approved_-for-publication.pdf) and chief examiner judgment can result in changes to the grade profile. In other words, comparable outcomes combines norm (or cohort) referencing and criterion referencing to award grades.

So would GCSE outcomes improve if Key Stage 2 outcomes improved? Not necessarily is the answer.

Key Stage 2 test results are used in the statistical predictions underpinning comparable outcomes. Ofqual calculate [transition matrices](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/910614/6674_Requirements_for_the_calculation_of_results_in_summer_2020_inc._Annex_G.pdf) which show the percentage of pupils who achieve each grade at GCSE for different bands of Key Stage 2 attainment. However, Ofqual standardize KS2 results when calculating these bands, which effectively removes any improvement in results from one year to the next.

This is not necessarily a problem, however. If examiners detected a higher standard of work in GCSE exam scripts or NRT results improved, there would be evidence to raise grades. The question is how effective these methods are in detecting such changes.

If Key Stage 2 results improved but GCSE results did not, this would raise questions about

* Whether the improvement at Key Stage 2 was genuine
* Whether teaching and learning during Key Stage 3 and Key Stage 4 was adapted to recognize the improvement at Key Stage 2

For this reason, perhaps the best we can say that improving Key Stage 2 (and Key Stage 1) literacy is necessary but not sufficient to raise attainment at GCSE. Further support to keep pupils on track during Key Stages 3 and 4 may well be necessary.

**Endnotes**

1. Level W = 0; Level 1=1; Level 2C=1.9; Level 2B=2.7; Level 2A=3.7; Level 3+=5. We only include pupils who have results in both reading and writing.
2. BLW= 0; PKF=0.9; WTS=1.9; EXS=3.3; GDS=5.0
3. Eligible for free school meals in the six years up to the end of Key Stage 4
4. Eligible for free school meals in Reception, Year 1 or Year 2
5. This would also be the case in maths as the vast majority of pupils enter English and maths. The process is slightly more complicated in other subjects.

This work was produced using statistical data from ONS. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

### Supplementary Tables A: Attainment at Key Stages 1 and 2 in 2019









Supplementary Tables B: Attainment at Key Stages 1, 2 and 4 of the 2019 Key Stage 4 Cohort

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Attainment at Key Stages 1, 2 and 4 by pupil characteristics** | | | |  |  |  |  |  |  |
| Pupils reaching the end of Key Stage 4 in state-funded schools in England in 2019 | | | | | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  | Key Stage 1 literacy | | Key Stage 2 literacy | | GCSE English Language | |  |
| Gender | Disadvantage at end of KS1 | Term of birth | % KS1 literacy <5 | % KS1 literacy <7 | % KS2 literacy <5 | % KS2 literacy <7 | % below Grade 4 | % below Grade 5 | Total pupils |
| All | All | All | 27% | 52% | 25% | 49% | 30% | 48% | 487751 |
| All | All | Aut | 20% | 42% | 21% | 44% | 28% | 44% | 160921 |
| All | All | Spr | 27% | 52% | 25% | 49% | 31% | 48% | 157348 |
| All | All | Sum | 34% | 61% | 28% | 54% | 33% | 50% | 169482 |
| All | No | All | 23% | 47% | 22% | 45% | 25% | 42% | 386784 |
| All | No | Aut | 16% | 37% | 18% | 40% | 23% | 39% | 127578 |
| All | No | Spr | 22% | 47% | 22% | 45% | 25% | 43% | 124141 |
| All | No | Sum | 29% | 56% | 25% | 50% | 27% | 45% | 135065 |
| All | Yes | All | 43% | 70% | 38% | 65% | 50% | 67% | 100967 |
| All | Yes | Aut | 34% | 60% | 34% | 60% | 46% | 64% | 33343 |
| All | Yes | Spr | 43% | 70% | 38% | 65% | 50% | 67% | 33207 |
| All | Yes | Sum | 52% | 78% | 43% | 69% | 53% | 70% | 34417 |
| F | All | All | 21% | 44% | 21% | 44% | 22% | 39% | 239750 |
| F | All | Aut | 15% | 35% | 18% | 39% | 20% | 36% | 78960 |
| F | All | Spr | 21% | 44% | 21% | 44% | 23% | 39% | 77599 |
| F | All | Sum | 27% | 54% | 25% | 49% | 24% | 41% | 83191 |
| F | No | All | 17% | 39% | 18% | 40% | 17% | 33% | 188930 |
| F | No | Aut | 12% | 30% | 14% | 34% | 16% | 31% | 62155 |
| F | No | Spr | 17% | 39% | 18% | 40% | 18% | 33% | 60842 |
| F | No | Sum | 22% | 49% | 21% | 45% | 19% | 36% | 65933 |
| F | Yes | All | 36% | 63% | 34% | 60% | 40% | 59% | 50820 |
| F | Yes | Aut | 27% | 53% | 29% | 54% | 37% | 56% | 16805 |
| F | Yes | Spr | 36% | 63% | 34% | 61% | 41% | 59% | 16757 |
| F | Yes | Sum | 44% | 73% | 38% | 65% | 43% | 62% | 17258 |
| M | All | All | 33% | 58% | 29% | 54% | 38% | 56% | 248001 |
| M | All | Aut | 25% | 49% | 25% | 49% | 35% | 53% | 81961 |
| M | All | Spr | 33% | 59% | 29% | 54% | 38% | 56% | 79749 |
| M | All | Sum | 40% | 67% | 32% | 58% | 41% | 59% | 86291 |
| M | No | All | 28% | 54% | 25% | 50% | 33% | 51% | 197854 |
| M | No | Aut | 21% | 44% | 21% | 45% | 30% | 48% | 65423 |
| M | No | Spr | 28% | 54% | 25% | 50% | 33% | 51% | 63299 |
| M | No | Sum | 35% | 63% | 29% | 55% | 35% | 54% | 69132 |
| M | Yes | All | 50% | 76% | 43% | 69% | 59% | 75% | 50147 |
| M | Yes | Aut | 41% | 67% | 38% | 65% | 56% | 73% | 16538 |
| M | Yes | Spr | 51% | 77% | 43% | 70% | 60% | 76% | 16450 |
| M | Yes | Sum | 59% | 83% | 47% | 73% | 62% | 78% | 17159 |