

# Achievement of 15-year-olds in England: PISA 2018 results

## Introduction and background

The Programme for International Student Assessment (PISA) is a study of educational achievement run by the Organisation for Economic Co-operation and Development (OECD). PISA is conducted every 3 years and assesses the abilities of pupils aged 15 in reading, mathematics and science. Each round of PISA focuses on one of the three main areas; in 2018, the focus was on reading. Seventy-nine countries participated in PISA 2018, including all members of the OECD and all 4 countries within the United Kingdom. In order to measure attainment, 5,174 pupils in 170 schools completed a 2-hour computer-based assessment. In contrast to GCSEs which test against a particular curriculum, PISA assessments measure pupils' ability to apply their knowledge to solve problems in real-world situations. In addition to the PISA assessments in reading, mathematics and science, schools and pupils complete questionnaires, which ask them about their background, their attitudes and feelings, their educational experiences and their future aspirations. In PISA 2018, pupils were asked in detail about their experiences of and attitudes towards reading, both inside and outside school. The PISA school questionnaire is completed by the headteacher or a senior teacher and collects information on various aspects of school management and organisation. In England, PISA 2018 was conducted from October 2018 to January 2019. Although all 4 countries in the UK participated in PISA 2018, this report focusses on findings for pupils in England.

## Key findings

### Achievement in reading

- The PISA 2018 reading literacy framework identifies 4 processes that readers use when engaging with a text. These are 'locating information', 'understanding', 'evaluating and reflecting' and 'reading fluency'. The first 3 processes were included in previous PISA frameworks. The latter process, 'reading fluency' underpins the other 3 and was included for the first time in the 2018 PISA framework.
- Across all processes, the mean reading score in England was 505 score points. This has remained consistent since 2006, and is above the OECD average of 487 points, as it was in PISA 2015. The top performers in reading were southeast Asian countries (B-S-J-Z (China), Singapore, Macao (China) and Hong Kong (China), with Estonia, Canada and Finland also scoring highly.
- Although the mean reading score has not shown a statistically significant change since PISA 2006, England's performance in relation to other countries has improved. In PISA 2018 there were 9 countries where the mean reading score was statistically significantly higher than that in England, compared to 12 countries in PISA 2015. New Zealand, Japan, Norway, and Germany, which all outperformed England in PISA 2015, performed similarly to England in PISA 2018. In 2018, England outperformed 7 countries which had had similar scores in 2015 (Slovenia, Belgium, France, Portugal, Netherlands, Switzerland and Russian Federation). There were 56 countries which performed significantly less well than England.
- High-achieving pupils scored significantly higher in 2018 than in 2009, the last time when reading was the major domain. However, the scores among the lower achievers have remained stable over time. The attainment gap between England's high and low achieving pupils in 2018 was similar to the OECD average.
- Looking at longer-term trends, there were 14 countries which performed similarly to England in 2009. Of those countries which also participated in 2018, 2 outperformed England, 5 performed similarly and 6 performed significantly worse.
- England has a significantly higher proportion of pupils working at the highest PISA proficiency levels (i.e. levels 5 and 6) than the OECD average and a significantly lower proportion of pupils working at level 2.
- Pupils in England showed relative strengths in the reading skills of 'locating information' and 'evaluating and reflecting' but were less strong in 'understanding'.
- In common with all other participating countries, girls in England outperformed boys in reading. However, the gender gap in England (20 points) was significantly smaller than the average gap across the OECD of 30 points.

### Achievement in science

- The 2018 mean score for England in science (507) remained significantly higher than the OECD average of 489. The top performers in science were from east Asian countries (B-S-J-Z (China), Singapore and Macao (China)). Estonia and Finland were the highest scoring countries in



Europe. There were 10 countries with significantly higher mean scores than England.

- The 2018 average science score in England was not significantly different from scores in any previous cycles of PISA since 2006. Of the OECD members in the study, 12 (including Japan, Finland, Canada, Australia, Switzerland, Denmark, Norway, and Spain) had a significant drop in science performance from 2015 to 2018, whereas just 2 (Poland and Turkey) that had a significant increase.
- In England, the gap between high and low achievers in science (measured as the gap between the 10<sup>th</sup> and 90<sup>th</sup> percentile) was 260 points - significantly larger than the OECD average. There were a larger number of pupils performing at level 5 or above (11%) than the OECD average of 7 per cent. Fewer pupils in England performed at below level 2 (17%) than the OECD average (22%).

In England, boys performed slightly better than girls in science, but the difference was not statistically significant. Boys achieved a mean score of 509 while that for girls was 506. This gender gap was similar to the OECD average.

### Achievement in mathematics

- England's mean score in mathematics (504) was significantly higher than in PISA 2015 (489), which is the first improvement in performance after a stable picture in all previous cycles of PISA. The number of countries significantly outperforming England decreased from 19 in 2015 to 12 in 2018, with England performing similarly to Denmark, Finland, Slovenia, Belgium, Germany, Republic of Ireland, and Norway, all of which had outperformed England in PISA 2015.
- The size of the gap between scores of the highest and lowest achievers in England measured as the gap between pupils at the 10<sup>th</sup> and 90<sup>th</sup>, the percentile was 240 points. This was slightly, but not significantly, higher than the OECD average.
- Lower achieving pupils made a significant improvement in mathematics, with the average points score of those at the 10<sup>th</sup> percentile increasing from 369 to 383 points. This meant a reduction in the gap between lower and higher achievers. Furthermore, the proportion of pupils in England working at the lower proficiency levels has decreased significantly.
- Boys in England significantly outperformed girls in mathematics by an average 13 points. This gap is similar to the one which existed in 2015.

### Variation in reading scores by pupil characteristics

- In common with all other countries, pupils from the most advantaged backgrounds in England had higher reading achievement than those from less socio-economically advantaged homes. There was an 82 point gap between those from the 4<sup>th</sup> quartile (most advantaged) and those from the 1<sup>st</sup> quartile (least advantaged). This gap in achievement was not significantly different in England from the OECD average.
- The country in which the most disadvantaged pupils have the best chance of succeeding in spite of their background is high-performing Macao (China). Here, the difference in reading performance between the most and least deprived quartiles was only 31 score points. This indicates that it is possible for a country to be high-performing and for the impact of socio-economic background to be low.
- The reading performance of pupils in England with an immigrant background was significantly lower than that of non-immigrant pupils, which is in line with the international trend. However, the difference is not statistically significantly different when gender and socio-economic

factors are accounted for.

- Pupils with Mixed or White ethnicity achieved, on average, higher mean reading scores than pupils from other ethnic groups, and significantly outperformed Asian and Black pupils. Pupils who spoke a language other than English at home also scored significantly less well in reading than pupils who spoke English at home. However, these analyses do not take account of other background characteristics.

### Pupils' attitudes and wellbeing

- Pupils in England were more confident in their reading ability than the OECD average, with a higher percentage agreeing with the statements that they were good readers and could understand difficult texts. They did, however, have more negative attitudes towards reading, with a lower proportion agreeing that reading was a favourite hobby and that they liked talking about books.
- Pupils in all countries reported reading online materials far more frequently than printed materials. The most popular reading activity was chatting online, a frequent activity for 92 per cent and 88 per cent of pupils in England and the OECD respectively.
- Pupils in England were, on average, less satisfied with their lives than pupils across the OECD countries. They were also more likely to feel miserable and worried and less likely to agree that their life has a clear meaning.
- In comparison with the OECD average, pupils in England had similar expectations of their highest level of qualification but were more likely to expect to have a professional job in the future.
- On average across the OECD countries, 27 per cent of pupils reported being bullied at least a few times a month, compared to 23 per cent in England.

### Schools

- In England, there were larger differences in reading achievement between pupils attending the same schools than there were between pupils in different schools, compared with the OECD average. This is to be expected in a largely comprehensive education system.
- It was also more common in England for headteachers to report that pupils were grouped by ability within schools, either by grouping them into different classes or by grouping within classes, than the OECD average. Grouping by ability is again more likely to be the case in a comprehensive system in which individual schools have pupils with a wide range of abilities.
- Headteachers in England reported fewer discipline problems or problems with either teacher or pupil behaviour than the OECD average. Pupils reported a similar incidence of bullying to the OECD average but showed a higher rate of disapproval of bullying behaviour.
- Headteachers in England reported a greater availability of ICT resources than on average in the OECD and were less likely than the OECD average to report that teaching was hindered by inadequate or poorly qualified teachers or support staff.

The full document can be downloaded from:

<https://www.gov.uk/government/publications/pisa-2018-national-report-for-england>