



Department  
for Education

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

## **Executive Summary**

### **December 2019**

Juliet Sismur, Robert Ager, Jenny Bradshaw, Rachel Classick,  
Maria Galvis, Joanna Packer, David Thomas and Rebecca  
Wheater: National Foundation for Educational Research

# Executive summary

## Introduction

The Programme for International Student Assessment (PISA) is a study of educational achievement organised 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. Pupils are assessed on their competence to address real-life challenges, and each round of PISA focuses on one of the three main areas – reading in 2018.

PISA enables governments to benchmark education policy and performance, to make evidence-based decisions and to learn from one another. It is also of great value to academic and research communities and to participating schools.

Nearly 80 countries participated in PISA 2018, including all members of the OECD and all 4 countries within the United Kingdom. In England, PISA 2018 was conducted from October 2018 to January 2019, with a sample of 5,174 15-year-old pupils in 170 schools.

## Highlights

In PISA 2018, mean scores in England were significantly above the OECD averages in all 3 subjects. The mean scores in reading and science in England have not changed significantly over successive PISA cycles, but in mathematics, England's overall mean score showed a statistically significant increase compared with PISA 2015.

As with previous cycles of PISA, the highest-performing countries were east Asian, with Singapore, Macao (China) and the combined regions of Beijing, Shanghai, Jiangsu and Zhejiang in China (B-S-J-Z (China)) dominating the top positions in all 3 subject areas.

England's mean score for reading was similar to scores for Scotland and Northern Ireland, and all 3 had scores significantly higher than Wales. In both science and mathematics, the mean scores for England were significantly higher than the scores for Wales, Scotland and Northern Ireland, which were not significantly different from each other.

## Achievement in reading

The mean reading score in England has remained consistent since 2006, and is above the OECD average, as it was in PISA 2015. The top performers in reading

were south-east 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 changed. 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, and England outperformed 7 countries in 2018 that had had similar scores in 2015 (Slovenia, Belgium, France, Portugal, Netherlands, Switzerland and Russian Federation).

High-achieving pupils scored significantly higher in 2018 than in 2009, when reading was last 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.

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 was significantly smaller than the average gap across the OECD.

## **Achievement in science**

The 2018 mean score for England in science remained significantly higher than the OECD average. The top performers in science were again from east Asian countries (B-S-J-Z (China), Singapore and Macao (China)), and Estonia and Finland were the highest scoring European countries. Ten countries had mean scores in science that were significantly higher than that of 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, compared to only 2 (Poland and Turkey) that had a significant increase.

In England, the gap between high and low achievers in science was significantly larger than the OECD average, with a larger proportion of pupils in England performing at the highest proficiency levels.

There was no statistically significant gap between performance of boys and girls in science in England, which was also the case in PISA 2015. This differs from the OECD average where there was a small but statistically significant gender gap in favour of girls.

## **Achievement in mathematics**

England's mean score in mathematics was significantly higher than in PISA 2015, which is the first time performance has improved after a stable picture in all previous cycles of PISA. England's average score was also significantly higher than the OECD average. 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 7 highest-performing countries in mathematics were all from east Asian countries (B-S-J-Z (China), Singapore, Macao (China), Hong Kong (China), Chinese Taipei, Japan and Korea), and the highest scoring European countries were Estonia and the Netherlands.

The size of the gap between scores of the highest and lowest achievers in England was similar to the OECD average. Lower achieving pupils made a greater improvement in mathematics than higher achievers, reducing the gap between them slightly since 2015, and the proportion of pupils in England working at the lower proficiency levels has decreased significantly.

Boys in England significantly outperformed girls in mathematics, as was also the case for the OECD average. The gap between boys and girls in England was similar to that in PISA 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. This gap in achievement was not significantly different in England from the OECD average.

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 whose ethnicity was Mixed or White 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. These analyses do not take account of other background characteristics, and in particular socio-economic status, which is likely to be an explanatory factor for differences in scores, as was the case for immigration background.

## **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 reported reading online materials far more frequently than printed materials, in both England and the OECD. The most popular reading activity was chatting online, a frequent activity for 92% and 88% 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.

## **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, compared with selective systems that generally show a much larger difference in achievement between schools. 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.

## **PISA across the UK**

There were no significant differences between mean scores for reading in England, Northern Ireland and Scotland, and all 3 were significantly above the OECD average.

The mean reading score in Wales was significantly lower than that of the other countries of the UK but not significantly different from the OECD average. In science and mathematics, the mean scores in England were significantly higher than the other countries of the UK and also higher than the OECD average. There were no statistically significant differences between Scotland, Wales and Northern Ireland, which again did not differ significantly from the OECD average.

In common with England, there was no significant change in the mean reading score in Northern Ireland and Wales since 2006. However, there was a significant improvement in the mean score for reading in Scotland compared with PISA 2015, following a similar sized fall between 2012 and 2015. In science, the mean score in England has remained stable while Scotland, Wales and Northern Ireland have shown a decline over successive cycles of PISA, each with mean scores in PISA 2018 that were significantly lower than those in PISA 2006. In mathematics, both England and Wales have shown improvements, with England's average score increasing between 2015 and 2018, and Wales's performance increasing compared to 2012, following a similar decrease between 2006 and 2012, while Scotland has declined significantly since PISA 2006 and Northern Ireland has remained broadly stable.

In all countries of the UK, girls significantly outperformed boys in reading, as was the case across the OECD countries. In science, girls significantly outperformed boys in Northern Ireland but there were no significant gender differences in England, Wales or Scotland. In mathematics, boys significantly outperformed girls in England and Scotland but there were no significant differences in Wales or Northern Ireland.

The gap in reading attainment between the most and least disadvantaged pupils was significantly smaller than the OECD average in Northern Ireland, Scotland and Wales, but the difference between England and the OECD average was not statistically significant.

Pupils in all countries of the UK had more negative attitudes towards reading than the OECD average, but pupils in England reported that they read more than those in the rest of the UK. Pupils in all UK countries were less satisfied with their lives than the OECD average, and had lower expectations of their highest level of qualification than pupils across the OECD.

Headteachers in Scotland reported more problems with pupil truancy and teacher absenteeism than those in the rest of the UK, while those in Wales reported greater shortages or inadequacies of educational materials (for example textbooks, IT equipment etc.). Principals in Northern Ireland reported more inadequacies with the physical infrastructure of their schools than headteachers in England, Wales and Scotland.



Department  
for Education

© National Foundation for Educational Research 2019

**Reference: DFE-RR961**

**ISBN: 978-1-83870-075-1**

The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

For any enquiries regarding this publication, contact us at:

[international.surveys@education.gov.uk](mailto:international.surveys@education.gov.uk) or [www.education.gov.uk/contactus](http://www.education.gov.uk/contactus)

This document is available for download at [www.gov.uk/government/publications](http://www.gov.uk/government/publications)