The latest PISA findings shine a light on UK performance in maths, science and reading. However, they should be read in context and with caution.

Dorothy Lepkowska takes a look

The usefulness and veracity of the PISA tests divide opinion in the education world. But, in the UK at least, the international comparisons can offer a useful insight into how our 15-year-olds are performing against each other, and the world.

The main focus of the recently published 2015 PISA tests was science, but students also had to complete questions on maths, reading and problem-solving. The exercise did not test knowledge, but rather students’ reasoning and interpretation skills and their ability to solve problems.

The PISA tests, administered by the Organisation for Economic Co-operation and Development (OECD), provide in-depth contextual information about different education systems, schools, teachers, students and how they live, and examine the relationships between these factors and levels of achievement.

Headteachers in England and Scotland were more likely to report teacher shortages, while heads in England and Wales were more likely to cite inadequate or poorly qualified teachers as a concern.

This information enables governments to inform their own policy-making. However, caution is needed. How students perform could also be due to a range of other factors that are not accounted for in the tests.

The NFER’s briefing paper, Key Insights from PISA 2015 for the UK Nations, urges caution on how much of other factors that are not accounted for in the tests.

In reading, no significant differences were recorded in scores in England, Northern Ireland and Scotland, but students in all three scored higher than young people in Wales.

In maths, students in England, Northern Ireland and Scotland scored slightly above the OECD average, while in Wales the score was significantly lower.

Once again, England had the highest percentage of top performers at 11 per cent, followed by Northern Ireland at 18 per cent, Scotland at 20 per cent, and Wales at 22 per cent. There were no significant gender gaps in performance in any of the four UK countries.

Wales recorded the smallest difference between the highest and lowest achievers, and England the largest – the equivalent of nearly nine years of schooling.

Performance in science had declined in Scotland and Wales since it was last the focus of PISA in 2006, while in England and Northern Ireland there were no significant differences.

Mathematics

In maths, students in England, Northern Ireland and Scotland scored slightly above the OECD average, while in Wales the score was significantly lower.

Once again, England had the highest percentage of top performers at 11 per cent, followed by Scotland at nine per cent, Northern Ireland at seven per cent, and Wales at five per cent.

However, 22 per cent of students in England failed to reach the baseline ability in maths and lower performing students had lower average scores than their peers elsewhere in the UK. The percentage not reaching baseline ability in Northern Ireland was 19 per cent, in Scotland 20 per cent, and in Wales 23 per cent.

Wales had the smallest difference between high and low achievers, while England had the biggest gap, which was equivalent to eight years of schooling. Boys performed better in maths than girls in England and Wales, but this was not a pattern repeated in Northern Ireland. In Scotland, however, girls were more likely to be top performers.

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Science

So how did the home countries’ performance compare? The PISA results show that students in England achieved significantly higher scores in science than their peers in the other three nations, with students in Wales scoring significantly lower.

Further analysis of the highest and lowest performers reveals that England had the highest number of top performers at 13 per cent, compared with Scotland at eight per cent, Northern Ireland at seven per cent, and Wales at five per cent.

England also had the lowest percentage of low performers, at 17 per cent, followed by Northern Ireland at 18 per cent, Scotland at 20 per cent, and Wales at 22 per cent. There were no significant gender gaps in performance in any of the four UK countries.

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Contextual data

As well as focusing on test scores, PISA seeks to explain how and why students perform as they do in different countries by looking at contextual data. An analysis of socio-economic status (SES), for example, reveals that England has the largest gap in performance of students with high and low SES, and Wales, the lowest. This means that, in Wales, performance has less to do with affluence than in England, and that other factors will also have affected student success.

The school environment may have an impact on outcomes. Headteachers in England and Scotland were more likely than colleagues elsewhere in the UK to report teacher shortages, while heads in England and Wales were more likely to cite inadequate or poorly qualified teachers as a concern. Welsh heads were also most likely to report that teachers being poorly prepared for class was a barrier to learning.

Maths in England

In its report Is Mathematics Education in England Working for Everyone?, the NFER analysed PISA data to find out how well England was supporting pupils from disadvantaged backgrounds in the teaching and learning of maths.

It found that, while no worse than in many other OECD countries, the gap between the most and least disadvantaged pupils was equivalent to three years of schooling at age 15. International evidence suggests this is a gap that is hard to plug.

Pupils in England were not found to be lacking in any particular aspect of maths but were weaker in the subject across the board.

In considering recommendations, the report highlighted evidence that grouping pupils by ability can have detrimental effects, and can lead to low-ability children being exposed to less rigorous maths and so fewer opportunities to reach their potential.

The report suggests that new methods of measuring deprivation need to be found and that summer-born children, who were found to be less likely to overcome disadvantage than their autumn-born classmates, need specific strategies to ensure they are not left behind.

Furthermore, new research is needed on those children who beat the odds to perform well, and on the sharing of successful, evidence-based strategies that schools are adopting to support disadvantaged pupils.

Dorothy Lepkowska is a freelance education journalist.

Further information

You can read NFER’s education briefings Key Insights from PISA 2015 in Scotland and Key Insights from PISA 2015 for the UK Nations, via www.nfer.ac.uk/research/pisa-2015/