

STILL AMONG THE BEST IN THE OECD PERFORMANCE DECLINING



FINNISH STUDENTS STILL AMONG THE BEST IN THE OECD...

In the light of the PISA 2012 results, **Finland's student proficiency in mathematical literacy** is still one of the best among the OECD countries. Finland's national average in mathematics was the sixth highest among the OECD countries and in twelfth place among the 65 participating countries – much lower than ever before.

There were seven countries and economies from Asia among the 15 best-performing countries. Top performers in earlier PISA studies, such as Shanghai, Singapore, Hong Kong, Taiwan and Korea, further improved their performance in this study – so much so that this group of five now forms a separate elite of its own. In the Nordic countries, proficiency in mathematical literacy is well below Finland's level, but a few European countries now outperform Finland.

Performance in **reading literacy** is still high in Finland by international standards. Finland's average score came in sixth place among all participating countries and in third place among all OECD countries. Only five Asian countries and economies outperformed Finland: Shanghai, Hong Kong, Singapore, Japan and Korea. Literacy scores were much lower in the rest of the Nordic countries than in Finland.

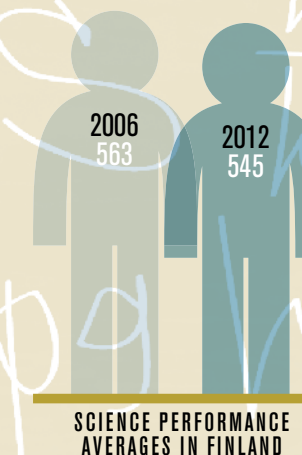
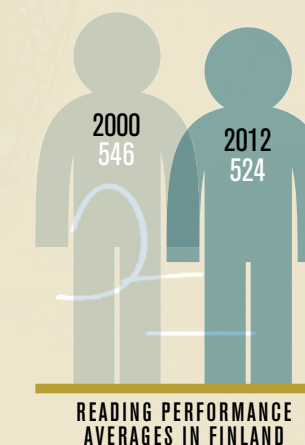
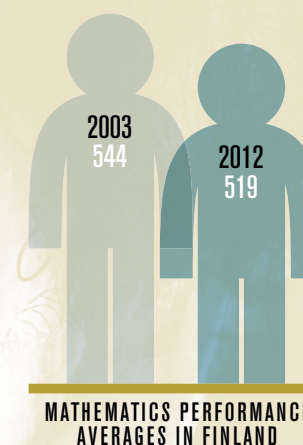
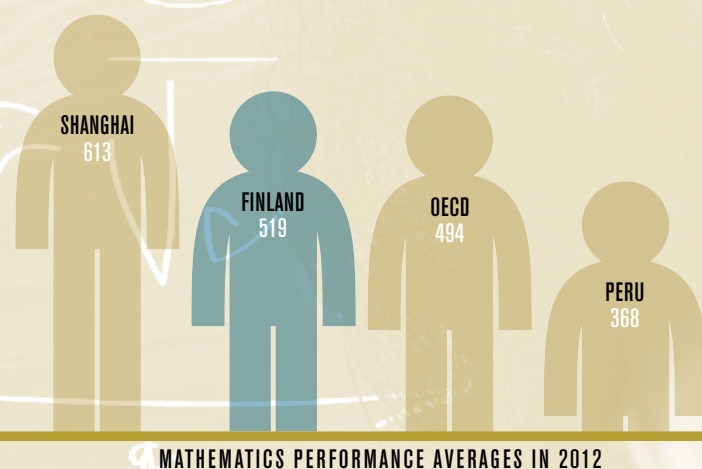
Finland's proficiency in **scientific literacy**, in turn, was among the best among the OECD countries along with Japan, Estonia and Korea. In the science assessment, Finland ranked in fifth place among all participating countries. Among the Nordic countries, Denmark and Norway were close to the OECD average whereas Sweden and Iceland ranked well below the average.

...BUT DOWNWARD TURN A CONCERN

Finland's national average in **mathematical literacy** has fallen by 25 points since the PISA 2003 assessment. This decline in the average score is statistically significant and corresponds to over six months' school year progress. In terms of the top tier countries in the 2003 study, Finland's average score has decreased the most, and the trend gives cause for serious concern.

Average performance in mathematical literacy has fallen in the **OECD countries** too: the average score in mathematics was 500 points in the 2003 survey while in the 2012 assessment it is 496 points. The average score in all 13 OECD countries showed a statistically significant decrease. The most marked fall was in Sweden (31 points).

Proficiency levels in **reading literacy** and **scientific literacy** have also fallen relative to previous studies. The average reading literacy score has fallen by 22 points compared to 2000 and by 12 points relative to 2009. Similarly, average science performance has dropped by 18 points relative to the 2006 assessment.





STUDENT PERFORMANCE IN MATHEMATICAL LITERACY ROUGHLY THE SAME FOR BOYS AND GIRLS

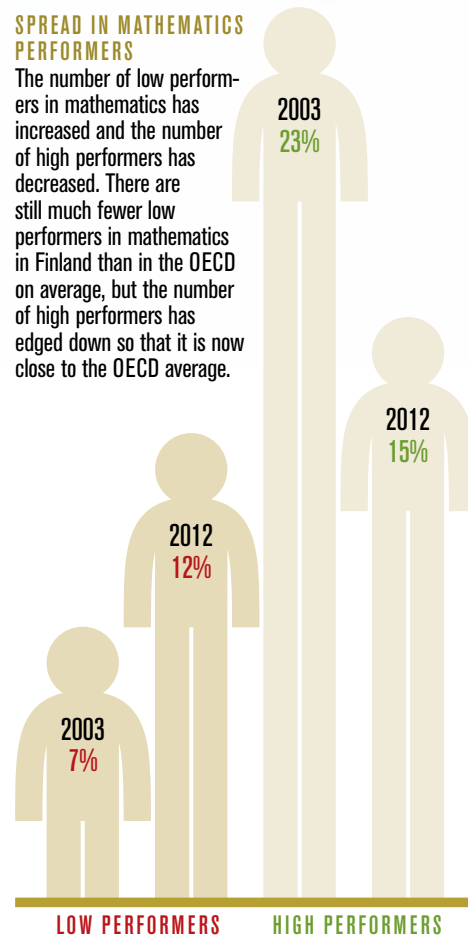
In the 2012 PISA assessment, the difference in mathematics performance between boys and girls was marginal in nearly 40% of all participating countries. The gender difference in mathematics performance was very small in Finland too, a mere 3 points. This time, however, girls outperformed boys for the first time, with the average score for girls being 520 points while for boys it was 517 points. In the OECD, the proficiency gap was an average of 11 points in favour of boys. The marginally better score in mathematics in favour of girls in Finland can be seen in the way in which boys and girls were split into lowest performers and highest performers. There were more boys than girls among the low performers in mathematics, 14% and 11% respectively. Among the high performers, instead, there were slightly more boys than girls: 16% and 14% respectively. There were also some

gender differences in proficiency in the four content categories of mathematics. In the category entitled ‘uncertainty’, the girls’ average score was 5 points higher than that of the boys. Girls performed better than boys in the category called ‘quantity’ (3 points difference in average scores). There were no gender differences in the other two categories (‘change and relationships’ and ‘space and shape’).

The gender gap was also small in the best performing countries and economies in mathematics – Shanghai, Singapore, Taiwan and Macao. The widest gender gaps in the OECD countries were in Luxembourg, Chile and Austria, where boys outperformed girls by over 20 points.

SPREAD IN MATHEMATICS PERFORMERS

The number of low performers in mathematics has increased and the number of high performers has decreased. There are still much fewer low performers in mathematics in Finland than in the OECD on average, but the number of high performers has edged down so that it is now close to the OECD average.



PERFORMANCE IN SWEDISH-SPEAKING SCHOOLS AT SAME LEVEL OR LOWER THAN IN FINNISH-SPEAKING SCHOOLS

In the PISA 2012 assessment, student performance in mathematical literacy in Swedish-speaking schools in Finland was roughly the same as in Finnish-speaking schools. Finnish-speaking students have outperformed their Swedish-speaking fellow students in mathematics in all earlier PISA surveys.

Student performance in reading literacy and science literacy was better in Finnish-speaking schools than in Swedish-speaking ones, as in the earlier assessment too. In the 2012 PISA survey, the average literacy score in Swedish-speaking schools was 508 points (525 in Finnish-speaking schools).

The average score in science performance was 519 points in Swedish-speaking schools (547 in Finnish-speaking schools). However, by international standards, student performance in Finland’s Swedish-speaking schools was good, and better than in the rest of the Nordic countries.

STILL ONLY MINOR DIFFERENCES BETWEEN SCHOOLS AND BETWEEN REGIONS

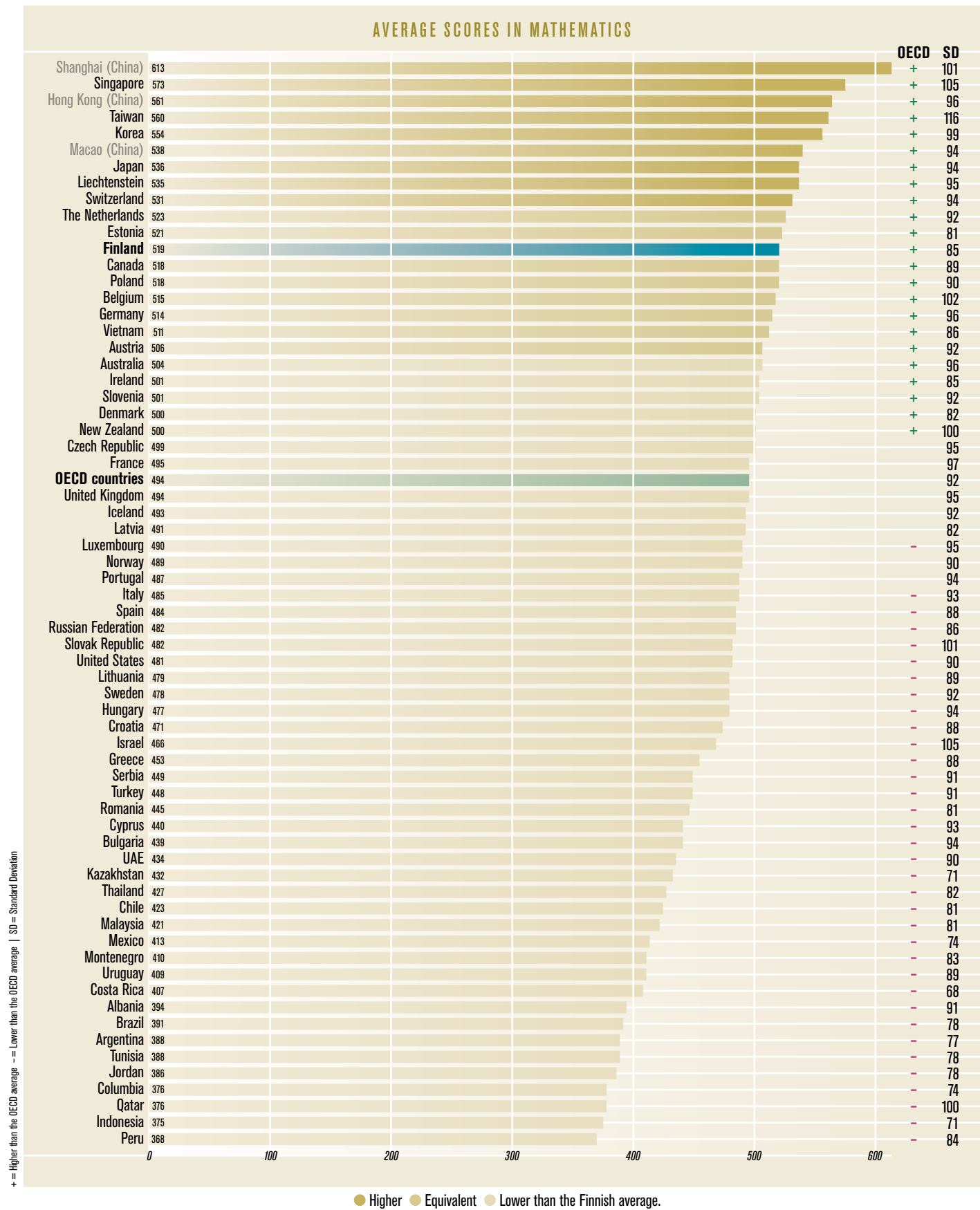
Differences in mathematics performance between different schools are still only minor. The PISA 2012 assessment shows that the variation in performance between schools in Finland is a mere 6% of overall variation in mathematics scores in the OECD. This is the second lowest figure by international standards. Variation in performance has been very low Finland throughout the PISA programme period. Compared with 2003, though, when the focus of the assessment was on mathematics, the variation between schools rose by about 2 percentage points. The spread in performance across different parts of the country is very even in all three assessment areas. The widest gap between schools in different parts of the country was 10 points, which is lowest figure among all participating countries in the PISA survey. Girls outperform boys especially in Northern and Eastern Finland whereas in Southern Finland the gap is much smaller.

MATHEMATICS CONTENT CATEGORY OF SPACE AND SHAPE



MOTIVATION AND ATTITUDES IMPORTANT IN LEARNING MATHEMATICS

Good performance in mathematics is explained by a number of factors that form a network of interlinked factors. In Finland, high proficiency in mathematics is related to the motivation of young people and their attitudes to studying and learning mathematics. Interest in mathematics, self-related belief in the ability to learn and confidence in being able to perform mathematical tasks, in particular, account for variation in student performance in mathematics in Finland more so than in the OECD on average. Factors related to socio-economic background, which includes the economic, cultural and social status of the students, account for far less of the variation in mathematics performance in Finland than in the OECD on average. The contribution of all these factors involving attitudes and motivation has remained virtually unchanged since 2003.



THIS IS WHAT IS ASSESSED

PISA 2012 is the fifth survey in the OECD Programme for International Student Assessment, which has been carried out every three years since 2000, assessing learning outcomes in reading, mathematical and scientific literacy. The focus in the assessment rotates every study year. In 2003 and 2012 the focus was on mathematical literacy. The focus area is assessed in detail while the other areas are looked at more briefly, mainly from the viewpoint of general developments in learning outcomes. This is the first time it is possible to assess developments in mathematical literacy in a reliable way over a timespan of nearly a decade. A significant part of the mathematical content in this survey is the same as in the PISA 2003 assessment. This makes it possible to examine trends in the different mathematics content categories.

PISA MATHEMATICS ASSESSES COMPETENCE USED IN DAILY LIFE

PISA starts with a concept of mathematical literacy that highlights the need to develop student skills and ability to apply and interpret mathematics in daily life. PISA defines proficiency in mathematics in terms of the students' capacity to use mathematical reasoning, mathematical knowledge, concepts, methods and tools to solve, explain and deal with probabilistic phenomena. The objective of the assessment is to reliably and comprehensively obtain measures of the extent to which students presented with mathematical problems can activate their mathematical knowledge and competencies to solve such problems successfully. Hence the problems included in the survey are as versatile as possible

and mainly set in real-world situations. The mathematical problems measure one content category at a time. The mathematics content categories are: quantitative thinking, uncertainty, change and relationships, and space and shape. Each task is also linked to mathematical process skills, which are the ability to formulate, use and interpret mathematics. A breakdown of the results is given in terms of overall results, and by content and process categories.

BROAD AND COMPREHENSIVE SAMPLE

The target group of the PISA 2012 assessment consists of students who have reached or will reach the age of 15 in the course of the assessment year (i.e. those born between February 1996 and January 1997). The material was collected from 311 schools using uniform test arrangements. Altogether 10, 157 students were randomly selected for the survey. The schools and students were sampled by an independent international statistical agency, and 90% of the sample students took part in the PISA test. All Swedish-speaking schools in Finland were included in the survey, and all schools with at least 5 immigrant students enrolled. All immigrant students in the sample schools participated in the assessment. The over-sampling of Swedish-speaking and immigrant students will be extensively exploited in detailed national surveys. The over-sampling of groups does not impact the overall assessment, because the groups are weighted in the international comparisons so that they correspond to their actual percentages in the reference population.

Altogether 311 schools and 10,157 students took part in the assessment in Finland.

Proficiency mathematical literacy highlights the need to develop skills for daily life.



THE RESULTS OF THE PISA 2012
SURVEY FOCUS ON MATHEMATICAL
LITERACY, WHICH WAS ALSO THE FOCUS
IN THE PISA 2003 ASSESSMENT.

THIS MEANS THAT FOR THE FIRST TIME
WE CAN NOW RELIABLY EXAMINE
THE CHANGES THAT HAVE TAKEN PLACE IN
STUDENT PERFORMANCE IN MATHEMATICS
IN THE COURSE OF NINE YEARS.

*The results, statistical data and conclusions are available at
www.minedu.fi/pisa*

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