PISA FOR SCHOOLS

How is my school comparing internationally?

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Director for Education and Skills
OECD

Madrid, September 22nd
PISA in brief

• Over half a million students...
  – representing 28 million 15-year-olds in 65 countries/economies

... took an internationally agreed 2-hour test...
  – Goes beyond testing whether students can reproduce what they were taught...
  – to assess students’ capacity to extrapolate from what they know and creatively apply their knowledge in novel situations
  – Mathematics, reading, science, problem solving, financial literacy
  – Total of 390 minutes of assessment material

... and responded to questions on...
  – their personal background, their schools and their engagement with learning and school

• Parents, principals and system leaders provided data on...
  – school policies, practices, resources and institutional factors that help explain performance differences.
PISA in brief

• **Key principles**
  
  – ‘Crowd sourcing’ and collaboration
    • PISA draws together leading expertise and institutions from participating countries to develop instruments and methodologies...
      ... guided by governments on the basis of shared policy interests
  
  – **Cross-national relevance and transferability of policy experiences**
    • Emphasis on validity across cultures, languages and systems
    • Frameworks built on well-structured conceptual understanding of academic disciplines and contextual factors
  
  – **Triangulation across different stakeholder perspectives**
    • Systematic integration of insights from students, parents, school principals and system-leaders
  
  – **Advanced methods with different grain sizes**
    • A range of methods to adequately measure constructs with different grain sizes to serve different decision-making needs – e.g. **PISA for Schools**
    • Productive feedback to fuel improvement at every level of the system.
Helen the Cyclist

Helen has just got a new bike. It has a speedometer which sits on the handlebar. The speedometer can tell Helen the distance she travels and her average speed for a trip.

Helen rode 6 km to her aunt’s house. Her speedometer showed that she had averaged 18 km/h for the whole trip.

Which one of the following statements is correct?

A. It took Helen 20 minutes to get to her aunt’s house.
B. It took Helen 30 minutes to get to her aunt’s house.
C. It took Helen 3 hours to get to her aunt’s house.
D. It is not possible to tell how long it took Helen to get to her aunt’s house.
Helen the Cyclist

Correct Answer: A. It took Helen 20 minutes to get to her aunt’s house.

This item belongs to the change and relationships category. This involves understanding fundamental types of change and recognising when they occur in order to use suitable mathematical models to describe and predict change.

<table>
<thead>
<tr>
<th>SCORING:</th>
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</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
</tr>
<tr>
<td>Calculate time travelled given average speed and distance travelled</td>
</tr>
<tr>
<td><strong>Mathematical content area:</strong></td>
</tr>
<tr>
<td>Change and relationships</td>
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<td><strong>Context:</strong></td>
</tr>
<tr>
<td>Personal</td>
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<tr>
<td><strong>Process:</strong></td>
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<tr>
<td>Employ</td>
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</tbody>
</table>
Percent of 15-year-olds who scored Level 3 or Above

PISA 2012 Sample Question 2
Mean score... Shanghai-China performs above this line (613)

High mathematics performance

580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410

Low mathematics performance

Average performance of 15-year-olds in Mathematics

Fig I.2.13
Socially equitable distribution of learning opportunities

High mathematics performance

Average performance of 15-year-olds in mathematics

Strong socio-economic impact on student performance

Low mathematics performance
Strong socio-economic impact on student performance

Socially equitable distribution of learning opportunities
Strong socio-economic impact on student performance

Socially equitable distribution of learning opportunities
Germany, Turkey and Mexico improved both their mathematics performance and equity levels. Brazil, Italy, Macao, China, Poland, Russian Federation, Thailand and Tunisia improved their mathematics performance (no change in equity). Liechtenstein, Norway, the United States and Switzerland improved their equity levels (no change in performance).
Fostering resilience

The country where students go to class matters more than what social class students come from.
PISA mathematics performance by decile of social background

Source: PISA 2012
Percentage of top performers in mathematics in 2003 and 2012

Across OECD, 13% of students are top performers (Level 5 or 6). They can develop and work with models for complex situations, and work strategically with advanced thinking and reasoning skills.
Why care about advanced skills?

Evolution of employment in occupational groups defined by PIAAC problem-solving skills

- Employment of workers with **advanced** problem-solving skills
- Employment of workers with **poor** problem-solving skills
- Employment of workers with **medium-low** problem-solving skills (PIAAC)

Source: PIAAC 2011
Math teaching ≠ math teaching

PISA = reason mathematically and understand, formulate, employ and interpret mathematical concepts, facts and procedures
Focus on word problems

Formal math situated in a word problem, where it is *obvious* to students what mathematical knowledge and skills are needed.
Focus on conceptual understanding

Index of exposure to formal mathematics

Fig I.3.1b
In most countries and economies, the disciplinary climate in schools improved between 2003 and 2012.

Change between 2003 and 2012 in disciplinary climate in schools

Disciplinary climate improved

Disciplinary climate declined
Countries where students have stronger beliefs in their abilities perform better in mathematics

Fig III.4.5
Schools with more autonomy perform better than schools with less autonomy in systems with more accountability arrangements.
Schools with more autonomy perform better than schools with less autonomy in systems with more accountability arrangements.

School autonomy for curriculum and assessment \( \times \) System's extent of implementing a standardised policy

![Bar chart showing the relationship between school autonomy and system accountability in terms of score points.](image-url)

- Less school autonomy
- More school autonomy
- Central mathematics standards
- No mathematics standards

Score points
- 455
- 460
- 465
- 470
- 475
- 480
- 485
Teachers' perceptions of the value of teaching

Percentage of lower secondary teachers who "agree" or "strongly agree" that teaching profession is a valued profession in society

- Malaysia
- Singapore
- Korea
- Abu Dhabi (UAE)
- Finland
- Mexico
- Alberta (Canada)
- Flanders (Belgium)
- Netherlands
- Australia
- England (UK)
- Norway
- Japan
- Latvia
- Serbia
- Bulgaria
- Denmark
- Poland
- Iceland
- Estonia
- Brazil
- Italy
- Czech Republic
- Portugal
- Croatia
- Spain
- Sweden
- France
- Slovak Republic

Above-average performers in PISA
Countries where teachers believe their profession is valued show higher levels of student achievement.

Relationship between lower secondary teachers' views on the value of their profession in society and the country's share of top mathematics performers in PISA 2012.

- Figure II.3

**Correlation:**
- $R^2 = 0.24$
- $r = 0.49$

**Countries:**
- Australia
- Brazil
- Bulgaria
- Chile
- Croatia
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Iceland
- Israel
- Italy
- Japan
- Latvia
- Lebanon
- Mexico
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Serbia
- Singapore
- Slovak Republic
- Spain
- Sweden
- United States
- England (UK)
- Alberta (Canada)
- Flanders (Belgium)

**Axes:**
- Y-axis: Share of mathematics top performers
- X-axis: Percentage of teachers who agree that teaching is valued in society
PISA and PISA for Schools measure the skills needed for future life of 15 years around the world.

- **PISA** shows how well a country is performing.
- **PISA for Schools** shows how well a school is performing.

PISA para centros educativos

PISA for Schools

**COMPARABLE**
<table>
<thead>
<tr>
<th>Provide information about how schools are performing</th>
<th>How are students performing in maths, science and reading - in an international context?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How conducive is the school environment and student motivation to learning?</td>
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<tr>
<td></td>
<td>How do these contextual factors shape learning?</td>
</tr>
<tr>
<td>Provide a backdrop for setting goals and planning improvements</td>
<td>What levels do we want our students to reach? The benchmark is no longer national standards alone.</td>
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<tr>
<td></td>
<td>What can be learnt from higher-performing school and school systems?</td>
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</tbody>
</table>
PISA for Schools instruments and data

Cognitive test: reading, mathematics and science

Student questionnaire: Socio-demographic factors and students attitudes

School questionnaire: school characteristics
PISA for Schools in Spain

Pilot 2013-2014

First administration 2015-2016
Results from PISA for Schools

Understand the data provided in the school report

My school results

Identifying areas to work on in the future

Planning Improvements
Gráfico 5.2 - Dónde se sitúa su centro en relación con los centros de otros países seleccionados en lectura en el PISA 2012

9% de centros situados en este rango muy alto
15% de centros situados en este rango alto
25% de centros situados por encima de la puntuación media
15% de centros situados en este rango bajo
25% de centros situados por debajo de la puntuación media
9% de centros situados en este rango muy bajo
Rango en el que se encuentra la media verdadera de su centro con un nivel de confianza del 95%
Socio-economic background
Disciplinary climate

Porcentaje promedio del 10% de alumnos con el rendimiento bajo en matemáticas
(en tono más oscuro si es significativamente diferente del de su Centro)
Porcentaje promedio del 10% de alumnos con el rendimiento alto en matemáticas
(en tono más oscuro si es significativamente diferente del de su Centro)

Los alumnos no atienden a lo que dice el profesor

Hay ruido y falta de orden

El profesor tiene que esperar mucho rato hasta lograr el silencio en la clase

Los alumnos no pueden trabajar bien

Los alumnos no empiezan a trabajar hasta mucho después de comenzada la clase

Porcentaje de estudiantes que informan que lo siguiente ocurre "nunca o casi nunca" o "en algunas clases"
Proficiency levels
What schools use the assessment for

PISA for Schools enables schools to

- Benchmark internationally
- Measure students’ real-life skills
- Local and global peer learning
- Drive practice shifts
Thank you for your attention!