

HOW AMBITIOUS CURRICULA, ALIGNED ASSESSMENT, AND FOCUS ON ALL STUDENTS CAN IMPROVE EDUCATION

NUNO CRATO

2020 The 8th International Conference on Teacher Education:
Focusing on Teaching Methods and Materials

Ministry of Education
NPTU Center of Teacher Education

6 NOVEMBER 2020

HOW AMBITIOUS CURRICULA,
ALIGNED ASSESSMENT, AND
FOCUS ON ALL STUDENTS
CAN IMPROVE EDUCATION

Nuno Crato

University of Lisbon

Minister of Education of Portugal (2011-2015)

I'll sustain that good national results need a good
and clear curriculum, aligned quality materials,
students' regular assessment, support to all,
vocational paths, and flexibility

Improving a Country's Education

PISA 2018 Results in 10 Countries

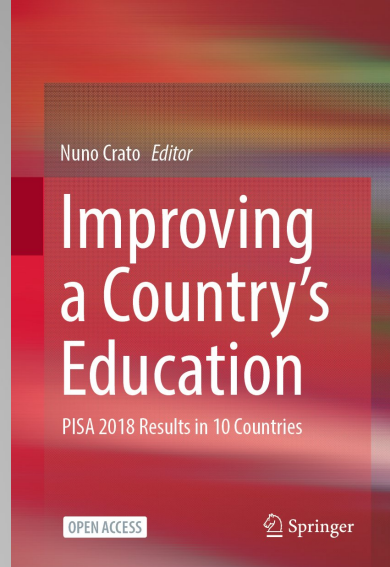
THANKS FOR THE INVITATION!

Professor **Wei-Min Hsu**
National Pingtung University

Professors
Su-Wei Lin,
Huey-Ing Tzou,
Pi-Hsia Hung
National University of Tainan
I-Chung Lu
National Pingtung University

Arto K. AHONEN
Luisa ARAÚJO
Patrícia COSTA
Nuno CRATO
Montse GOMENDIO
Eric A. HANUSHEK
Pi-Hsia HUNG
Maciej JAKUBOWSKI
Ema LAGOS
Su-Wei LIN
I-Chung LU
João MARÔCO
Tim OATES, CBE
Gunda TIRE
Sue THOMSON
Huey-Ing TZOU

PISA National Project Manager, University of Jyväskylä, **Finland**
ISEC, Portugal
European Commission Joint Research Center, Italy
ISEG, University of Lisbon, Portugal
Spanish Research Council, **Spain**
Hoover Institution, Stanford University, **USA**
PISA PI, University of Tainan, **Taiwan**
University of Warsaw and Evidence Institute, **Poland**
PISA National Coordinator, NAEQ, **Chile**
PISA co-PI, University of Tainan, Taiwan
PISA co-PI, Pingtung University, Taiwan
ISPA, **Portugal**
Cambridge Assessment, **England**
Foundation Innove, **Estonia**
Australian Council for Educational Research, **Australia**
PISA co-PI, National University of Tainan, Taiwan



0. SIXTY-SIX YEARS OF INTERNATIONAL LAST-SCALE ASSESSMENTS – ILSA

1958 – IEA, International Association for the Evaluation of Educational Achievement created in Hamburg

1964 – First International Mathematics Study, FIMS, IEA, 12 countries

1970 – FISS, First International Science Study, IEA

1980 – SIMS, Second Studies in Mathematics, IEA

1983 – SISS, Studies in Science, IEA

REGULAR ILSA STARTED

1995 – TIMSS, Trends in International Mathematics and Science Study, every four years, IEA

2000 – PISA, Program for International Student Assessment, every three years, OECD

2001 – PIRLS, Progress in International Reading Literacy Study, every five years, IEA

FURTHER ILSA

ICCS, International Civic and Citizenship Study, every seven years, IEA

ICILS, International Computer and Information Literacy Study, every five years, IEA

PIAAC, a survey of adult skills, OECD

TALIS, Teaching and Learning International Survey, OECD

PISA and TIMSS

Country participation is voluntary

Randomized multi-stage random students selection

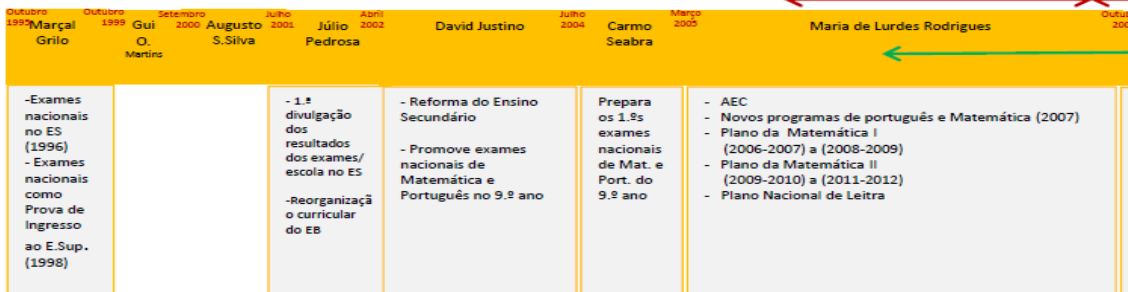
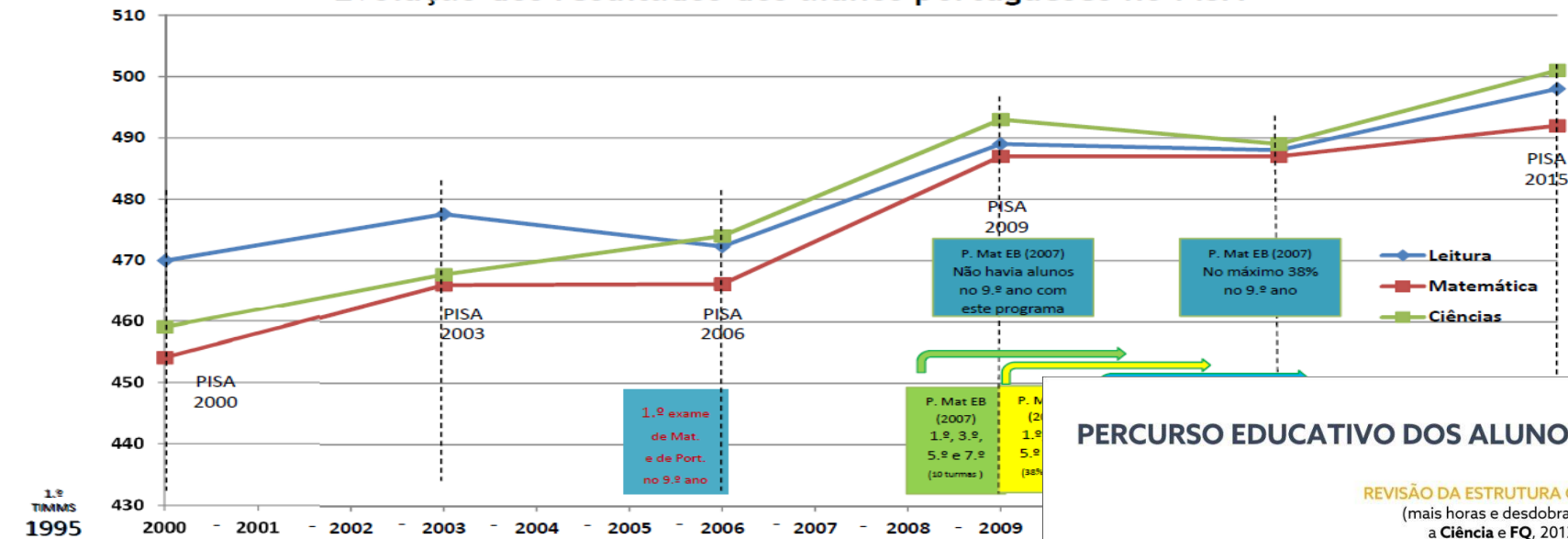
Most questions are confidential – allow reuse

PISA – age based: 15 year-olds – applied knowledge and skills – OECD has ideas about what education should be

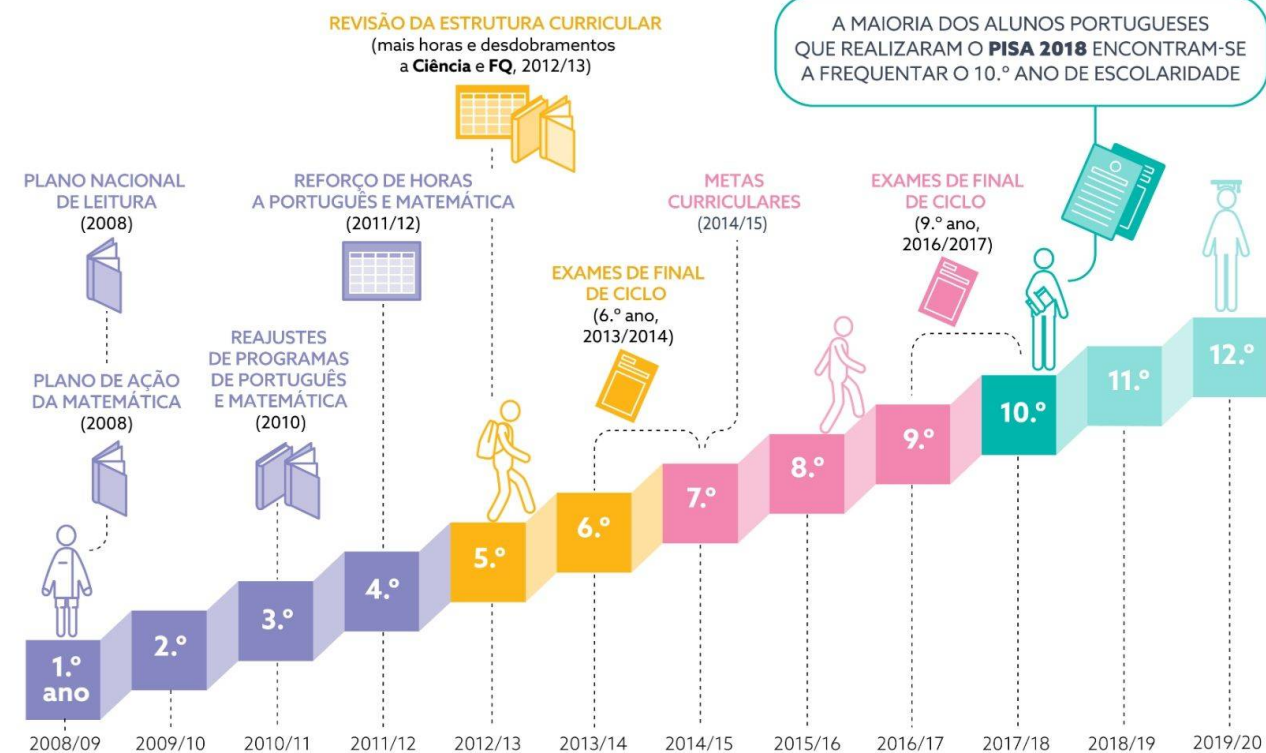
TIMSS – grade based: 4th and 8th – curriculum sensitive – IEA tries to measure approx. curricular achievement

20 years of systematic comparable ILSA allow for panel, time series analysis, and causality analysis

Evolução dos resultados dos alunos portugueses no PISA



PERCURSO EDUCATIVO DOS ALUNOS DO PISA 2018

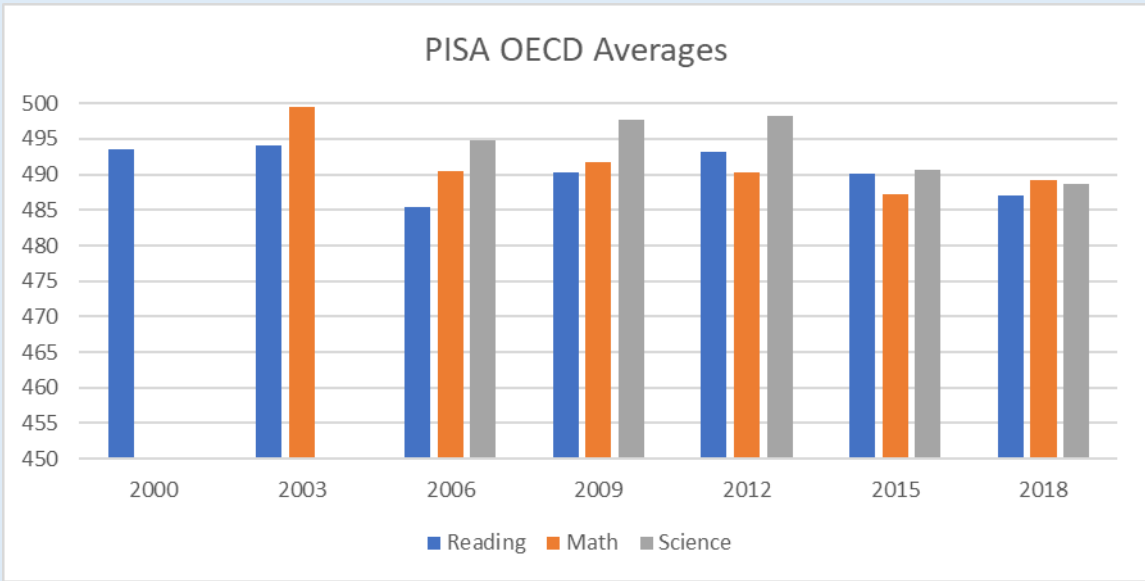


PISA rotates three main domains

Tries to calibrate each domain with OECD mean at 500

40 score points is roughly equivalent to one year grade

Evolution of PISA Results for OECD Countries



PISA OECD countries averages include countries that have participate in all PISA waves.

Source: OECD IDE reports with recomputed updated data

PISA 2018 Reading Scores Levels of Proficiency

Level 6	Above 698.32 score points
Level 5	From 625.61 to less than 698.32 score points
Level 4	From 552.89 to less than 625.61 score points
Level 3	From 480.18 to less than 552.89 score points
Level 2	From 407.47 to less than 480.18 score points
Level 1a	From 334.75 to less than 407.47 score points
Level 1b	From 262.04 to less than 334.75 score points
Level 1c	From 189.33 to less than 262.04 score points
Below level 1c	Less than 189.33 score points

Students scoring below level 2 are considered low-performers. Students scoring above level 4 are considered high-performers.

Source: OECD, PISA 2018 Database, Table I.B1.4; Figure I.4.1.

Introduced in 2018

Introduced in 2015

HIGH QUALITY FOR ALL

Worldwide: UNESCO 2017

56% in Math below MPL

58% in Reading below MPL

European Union Target for 2020:

Low achievers < 15%

LOW PERFORMERS	2009	2012	2015	2018
OECD				
Science	18.8	18.7	22.1	22.0
Math (36)	23.5	24.4	24.6	24.1
Reading	19.4	18.9	20.9	22.6
All domains				13.4
EU				
Science		16.6	20.6	21.6
Math (36)		22.1	22.2	22.4
Reading		17.8	19.7	21.7
All domains				12.7*

1. THE MEASUREMENT CHANGES THE MEASURED

El secreto portugués para mejorar casi 30 puntos desde que existe PISA

El informe en educación corrobora las mejorías detectadas en los informes TIMSS y PIRLS

JAVIER MARTÍN

Lisboa - 6 DIC 2016 - 15:25 CET



Nuno Crato inaugura una escuela en su etapa de ministro de Educación.

Mientras países como España se han mantenido en [puntuaciones similares desde que empezó a hacerse la prueba PISA](#), el vecino Portugal ha conseguido aumentos cercanos a los 30 puntos (el equivalente a un curso escolar, según la convención a la que ha llegado la OCDE) después de seis evaluaciones. La espectacular mejora de Portugal no solo en el informe PISA, sino también en el reciente [TIMSS \(que mide matemáticas y ciencias\)](#) se explica por la introducción de objetivos a los profesores y de exámenes externos a los alumnos o por una hornada de chavales portugueses súbitamente talentosos.

MÁS INFORMACIÓN



Asia consolida el podio en educación



Los resultados del PISA llegan una semana después del TIMSS, donde Portugal sobrepasa a países con modélicos programas educativos, como Holanda o Finlandia. En el caso de la enseñanza en Matemáticas que mide TIMSS, en 20 años Portugal ha pasado de ocupar el penúltimo lugar de todos los países analizados a ser el 13º de 49, muy por delante de, por ejemplo, España (31º). Es el país que más ha mejorado en estas dos décadas de controles.

El mismo TIMSS destaca que los alumnos portugueses son los que mejor puntúan a sus profesores y, no menos importante, son los que tienen más horas de clase de matemáticas en 4º año: 275 horas anuales, frente a una media de 157, aunque también hay que puntualizar que Corea del Sur, uno de los tres países más destacados en Matemáticas, solo imparte 100 horas



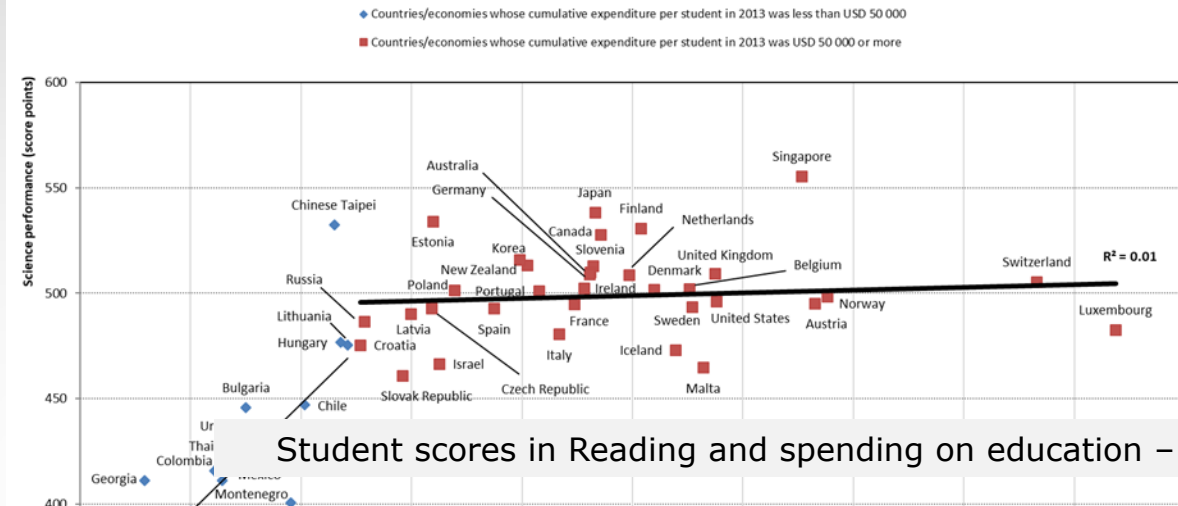
" Schule macht dumm ". (Schools make you stupid)

2. TIME DELAY

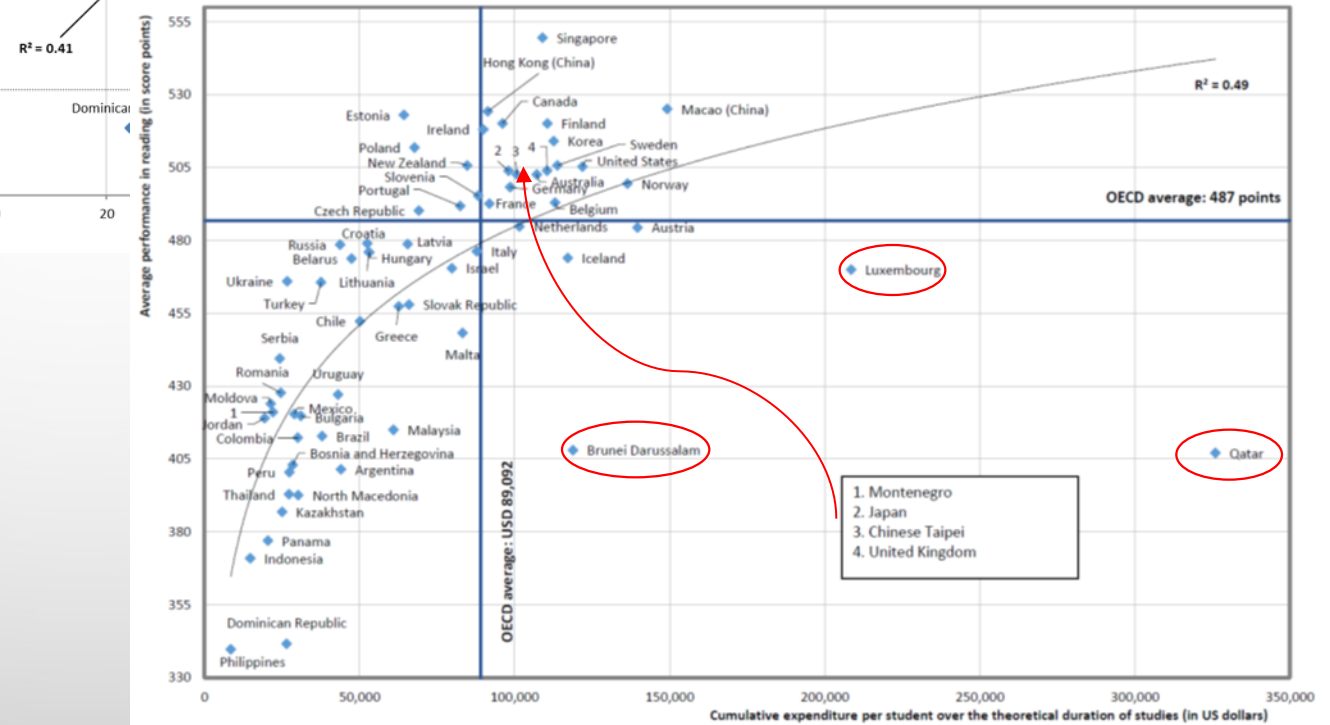
- In education things take time
- It's difficult to disentangle causes and effects
- How long is long time?
 - Parents' education levels, cultural environment... various decades or centuries
 - Structural measures: one or two decades
 - e.g., teachers initial training requirements: 11 years until new teachers start working
 - Short-term measures: one to five years
 - New math curriculum for high school – three to five years
 - Introduction or removal of exams – one year, a few months...

3. MONEY MATTERS... SOMETIMES

Student scores in Sciences and spending in education – PISA 2015



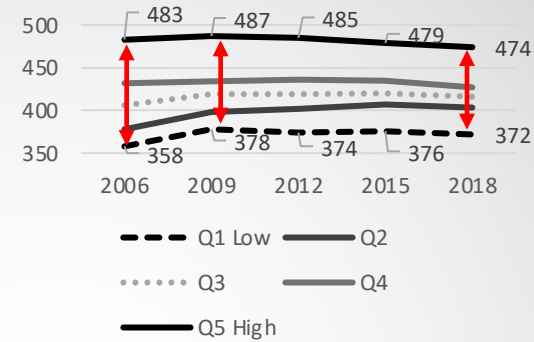
Student scores in Reading and spending on education – PISA 2018



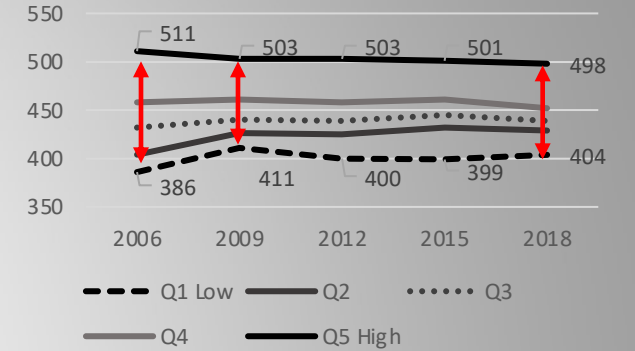
4. PERFORMANCE AND INEQUALITY

- Performance and equity should go together
- We have beneficial inequality reduction
- And we have undesirable reduction of inequalities

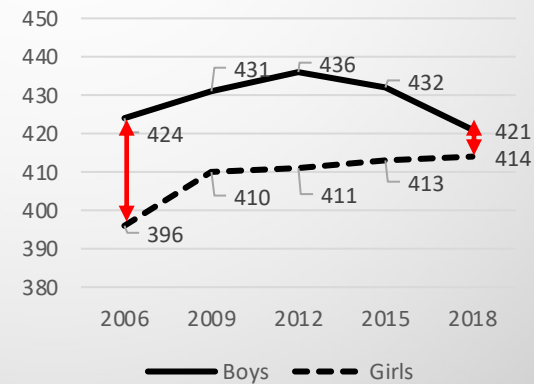
Trends in Mathematics performance
ESCS differences - Chile



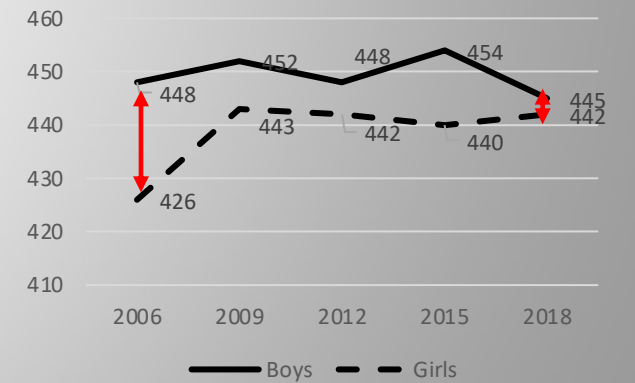
Trends in Natural Science performance
ESCS differences - Chile



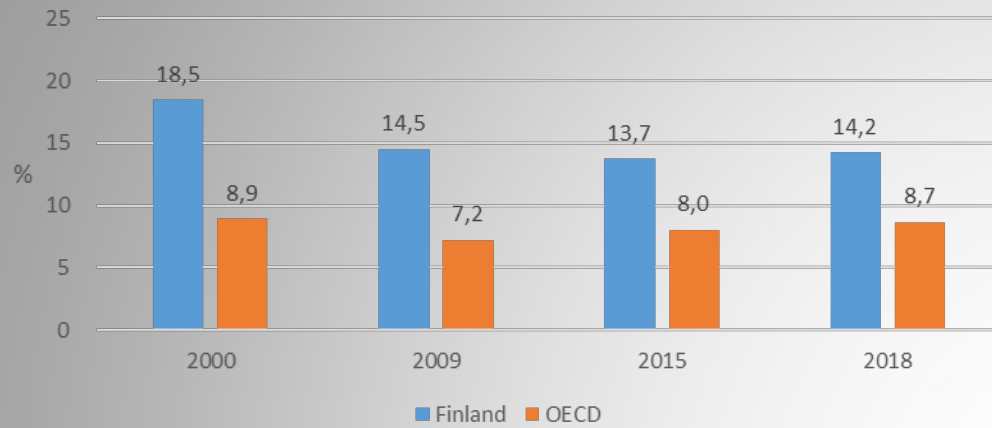
Trends in Mathematics performance
Gender differences - Chile



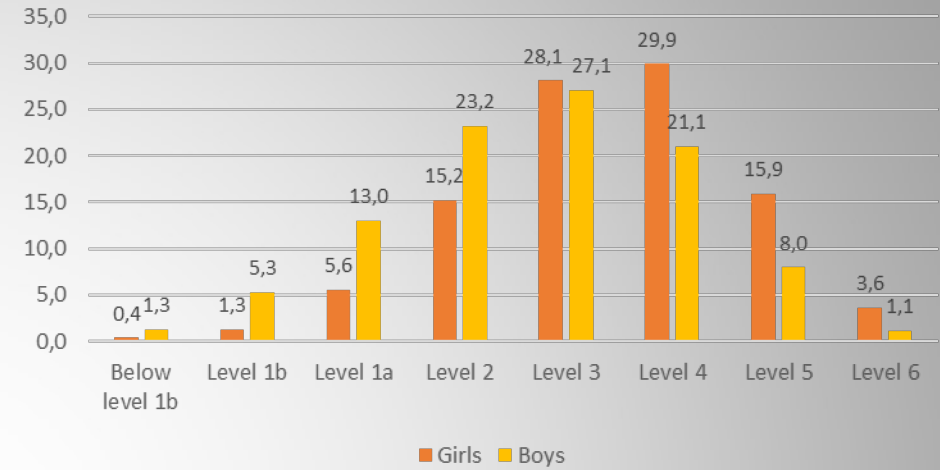
Trends in Natural Science performance
gender differences - Chile



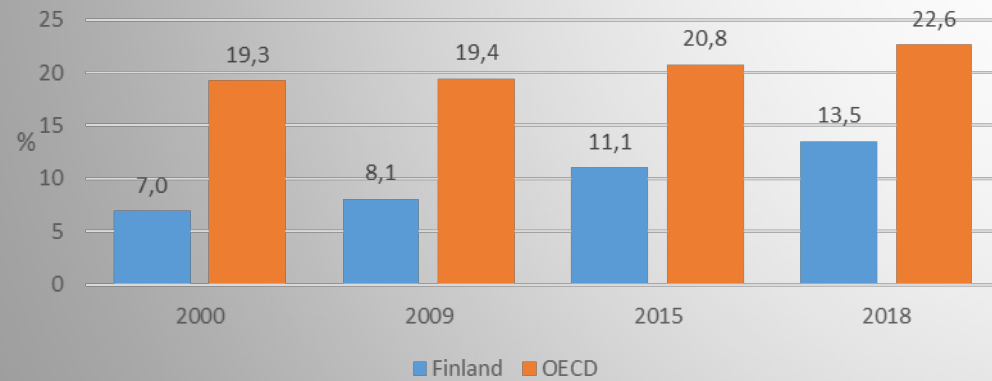
Reading score on levels 5 and 6



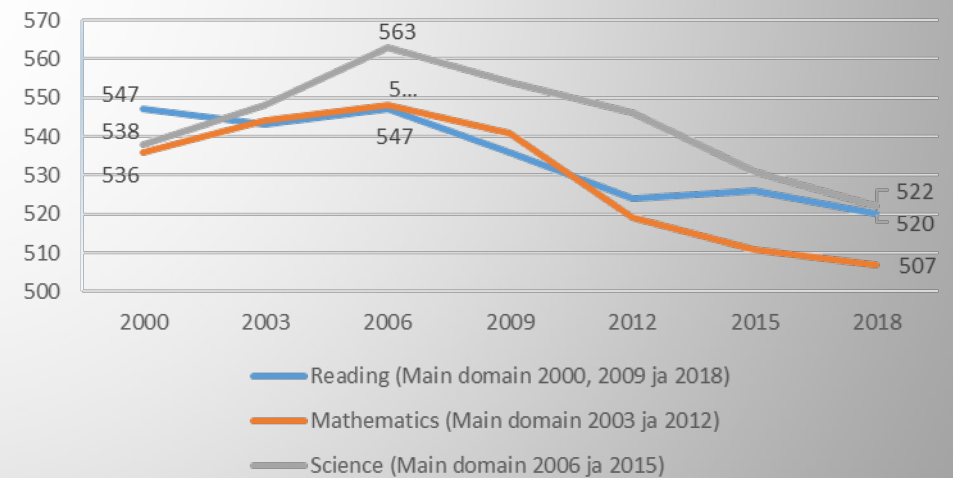
PISA 2018 Reading proficiency levels in Finland

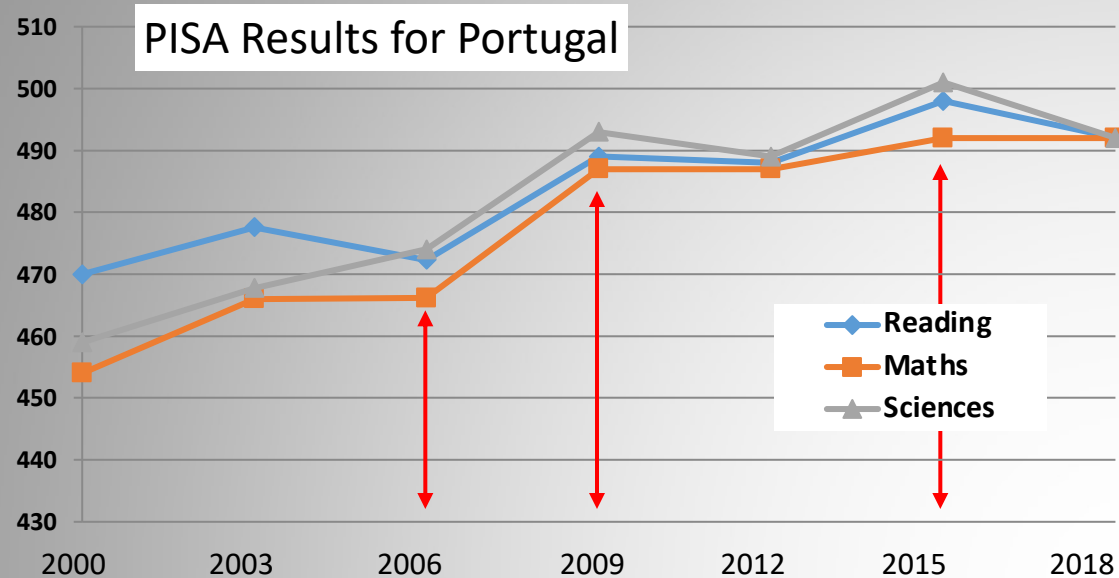


Reading score below 2

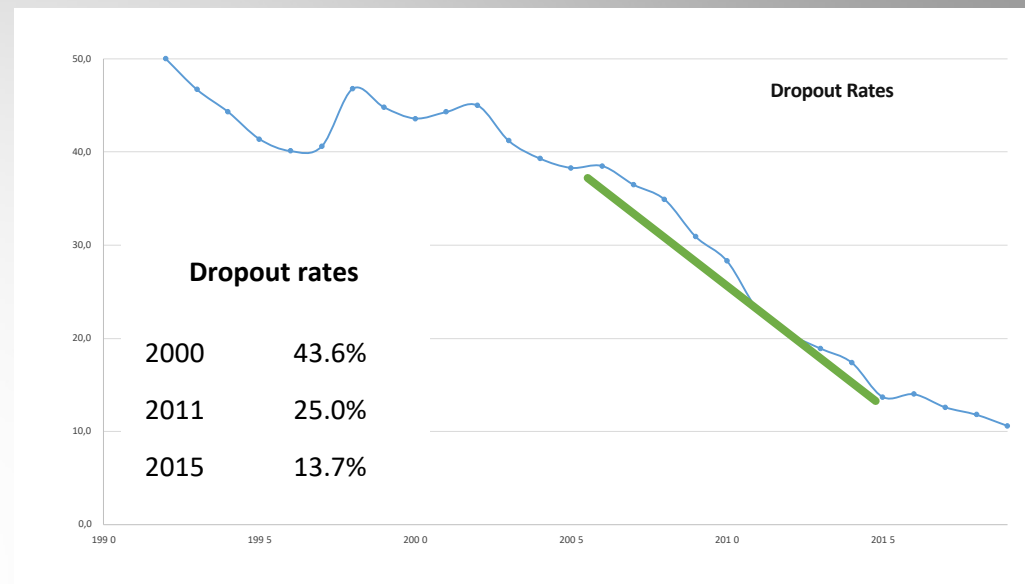


Finland's proficiency trend across PISA cycles



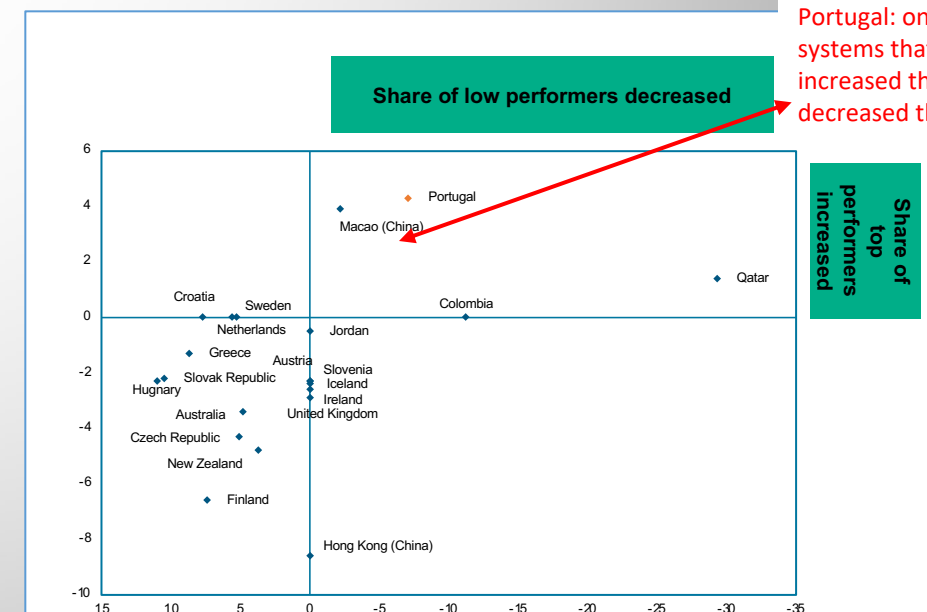


LOW PERFORMERS	2009	2012	2015	2018
PORTUGAL				
Science	16.5	19.0	17.4	20.2
Math (36)	23.7	24.9	23.8	23.3
Reading	17.6	18.8	17.2	19.6
All domains				12.6
EU				
Science		16.6	20.6	21.6
Math (36)		22.1	22.2	22.4
Reading		17.8	19.7	21.7
All domains				12.7*

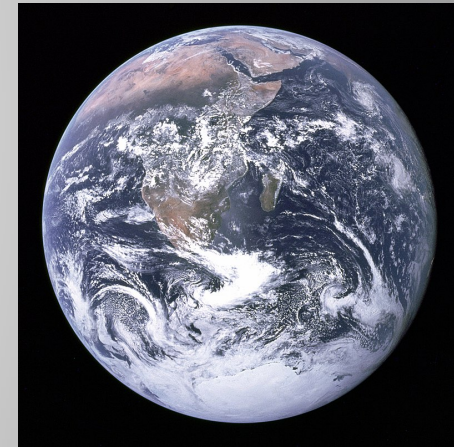
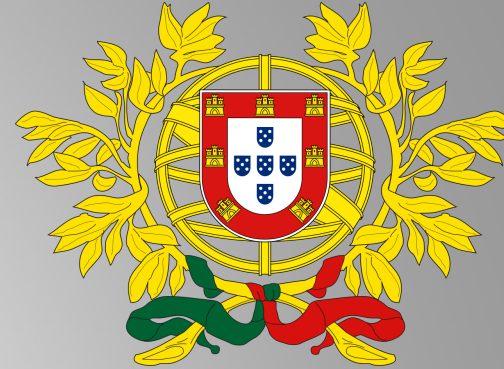
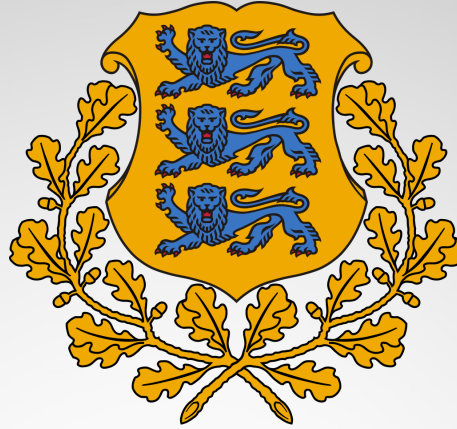


PISA 2006-2015

Portugal: one of only two systems that significantly increased the top and decreased the bottom



5. EXAMS AND ASSESSMENT



6. CURRICULUM AND PEDAGOGY

Factors associated with science performance

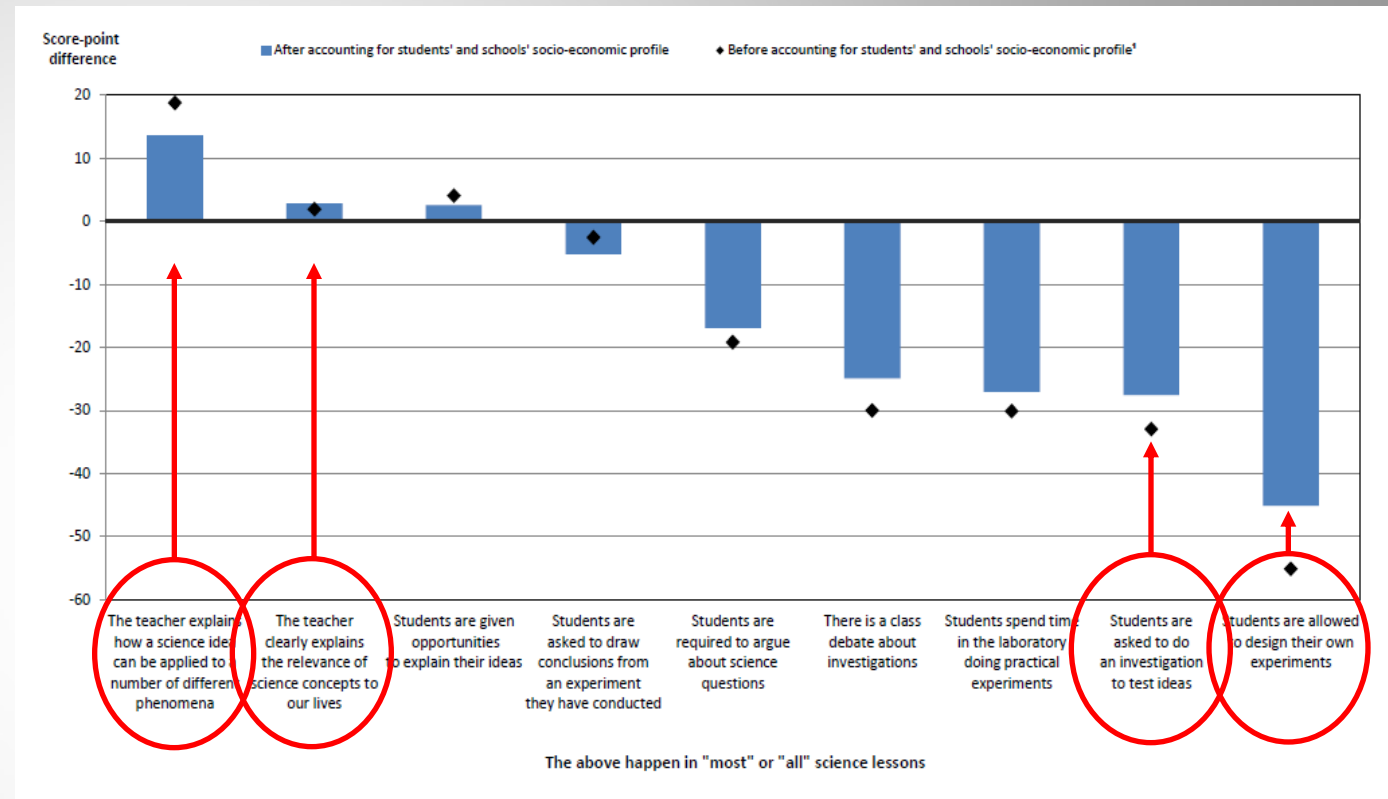


1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS). 2. In the two weeks prior the PISA test. 3. Includes homework, additional instruction and private study. Factors are ranked in descending order of the z-scores for OECD countries.

Source: OECD, PISA 2015 Database. Figure II.7.2 from OECD (2016b). <http://dx.doi.org/10.1787/888933436455>

CURRICULUM AND PEDAGOGY

Enquiry-based teaching practices and science performance



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status. All differences are statistically significant.

Source: OECD, PISA 2015 Database, Table II.2.28. Figure II.2.20 from OECD (2016b).

<http://dx.doi.org/10.1787/888933435628>

A CURRICULUM FOR THE TWENTY-FIRST CENTURY

EQUAL OPPORTUNITIES THROUGH A DEMANDING EDUCATION

A challenging education is the only real instrument for poor people to progress.

Do not water down the curriculum nor the assessment

FOCUS ON PERMANENT AND CENTRAL PILLARS

We cannot fail Reading and Math

Data analysis, History, Geography, Sciences, Arts...

Critical and active citizens in a changing world need knowledge and training that is not easily outdated

MODERNIZE SCHOOLS DEVELOPING KNOWLEDGE

Modernize teaching

But still convey knowledge and develop skills

Structure helps learning – we learn by building upon what we know – skills don't develop in a vacuum

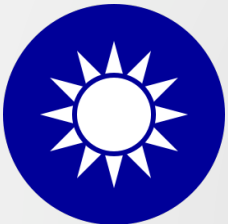
INCREASE SELF-REGULATION THROUGH EXTERNAL ASSESSMENT

Allow schools to give additional help to those who need

School autonomy needs national references

Do not micromanage, but evaluate

7. TEN CONCLUSIONS FROM REFLECTING ON TEN COUNTRIES EXPERIENCES



1. Everything starts with the curriculum
2. Curriculum should be ambitious, rigorous and structured
3. Everything should be coherent with the curriculum
4. We need to fight both for quality and for improving struggling students
5. We need a balance between innovation and proven teaching methods
6. Assessment is crucial
7. Teachers quality is crucial
8. We need to involve parents and the public
9. The essential is students' progress
10. Education policies need to be judged by results rather than by intentions

Thank you!