# Strategies to Achieve Pro-Poor Growth in Brazil, China, India and Europe: The Case of the Education Sector

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***PISA in developing and developed countries - Comparative lessons to be learned for making education more pro-poor growth directed***

Bernard Hugonnier
OECD Deputy Director for Education


## Outline

I. Presentation of PISA
II. What are the educational competitive advantages of OECD countries?
III. Are attitudes to science of students from non-OECD countries more positive?
IV. What are the main policy issues?
V. What is the best education based development strategy?
VI. Conclusions

# 1. PISA: key objectives

PISA provides:

- Information on how well education systems prepare students for life by equipping them with the appropriate skills
- A reliable assessment of learning outcomes
- A comparative international evaluation and analysis providing indispensable information to interpret national results

PISA assesses

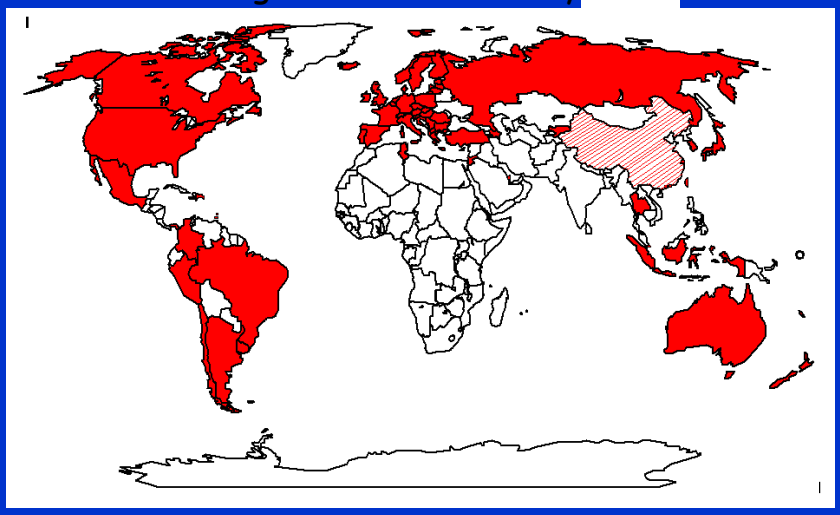
- Reading literacy
  - Using, interpreting and reflecting on written material.
- Mathematical literacy
  - Recognising problems that can be solved mathematically, representing them mathematically, solving them.
- Scientific literacy
  - Identifying scientific questions, recognising what counts as scientific evidence, using evidence to draw conclusions about the natural world

# PISA assessment schedule

| 2000 | 2003 | 2006 | 2009 | 2012 |
|---|---|---|---|---|
| Reading | Reading | Reading | Reading | Reading |
| Maths | Maths | Maths | Maths | Maths |
| Science | Science | Science | Science | Science |
| | Problem solving | | | |

# PISA countries in 2009

Coverage of world economy 87%



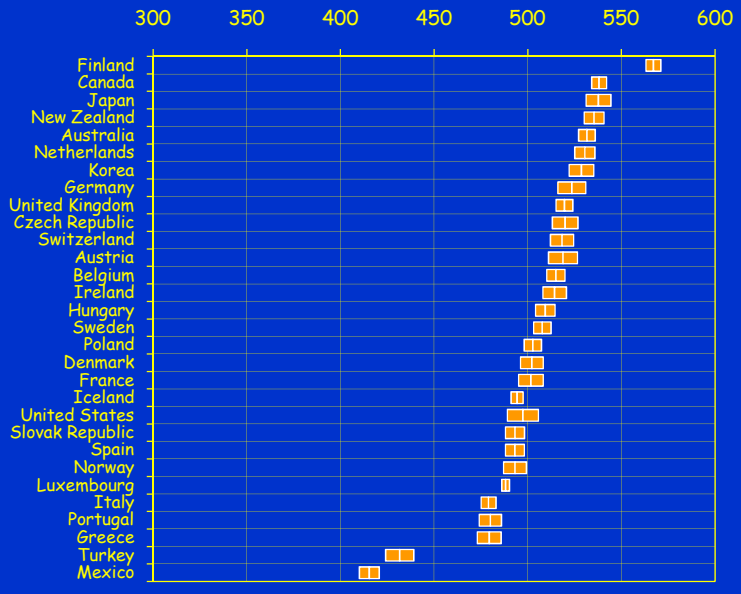


# Non-OECD participating countries in PISA 2006

| Region | Countries |
|---|---|
| South America | Argentina, Brazil, Chile, Colombia, Uruguay |
| Africa | Tunisia |
| Europe | Bulgaria, Croatia, Estonia, Latvia, Lichtenstein, Lithuania, Montenegro, Romania, Russia, Serbia, Slovenia |
| Middle East | Israel, Jordan, Qatar |
| Central Asia | Azerbaijan, Kyrgyzstan |
| Asia Pacific | Hong-Kong China, Indonesia, Macao China, Chinese Taipei, Thailand |

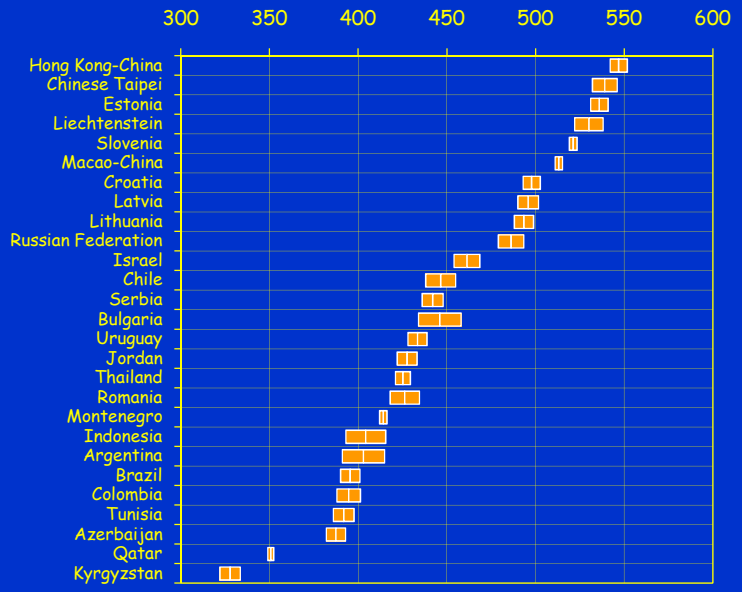
# II. What are the educational competitive advantages of OECD countries?

# Mean performance on the science scale
## OECD



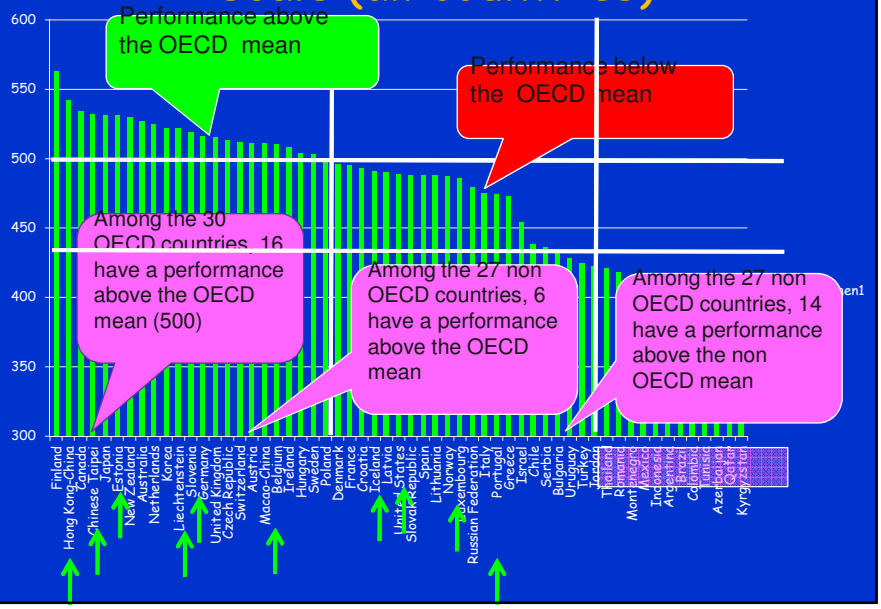

OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World*, Figure 2.11b

# Mean performance on the science scale non OECD

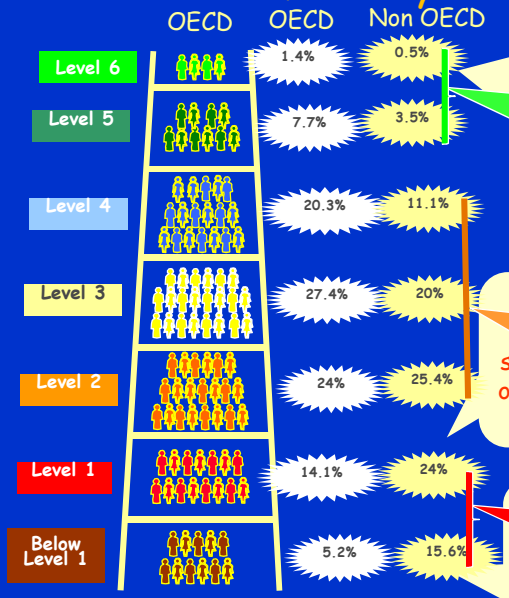



OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World*, Figure 2.11b

# Mean performance on the science scale (all countries)



# PISA Proficiency Levels in Science




9% of students in OECD countries perform very well against 4% in non OECD countries

knowledge about science in a variety of complex life situations

72% of students in OECD countries have an average performance against 57% in non OECD countries

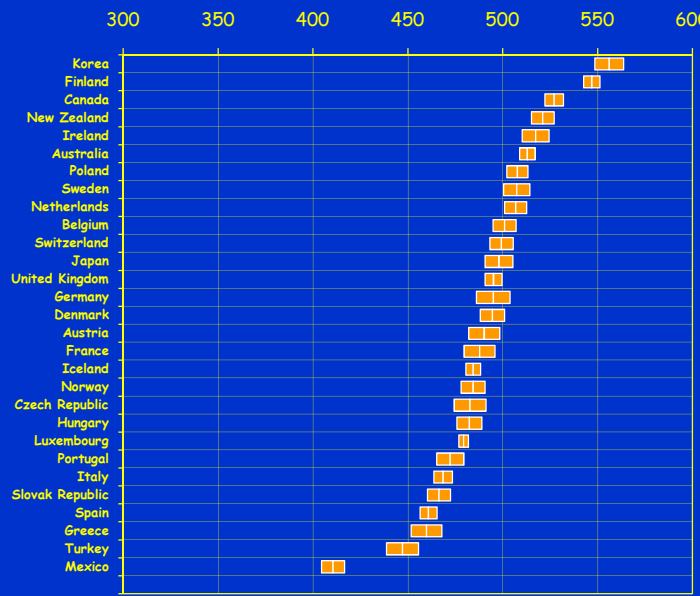
scien
only be applied to a few, familiar situations

19.3% of students in OECD countries under perform; against 39.6% in non OECD countries

in ways required by easiest PISA tasks.

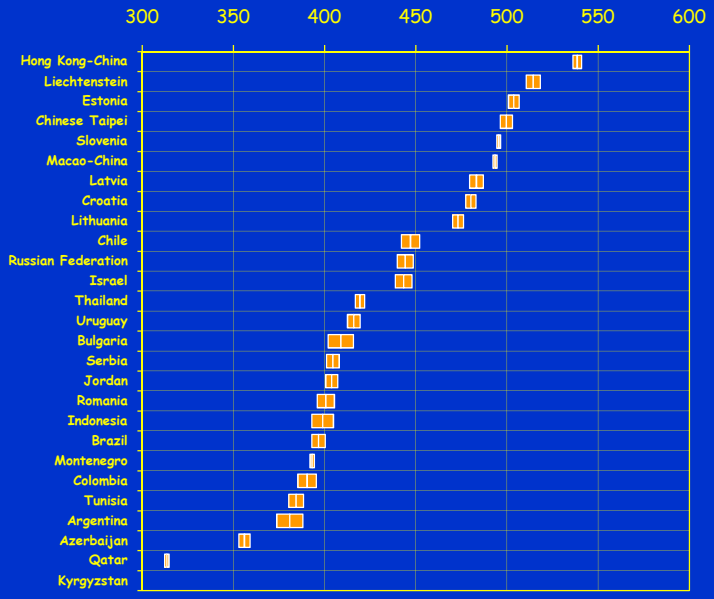
OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World*, Table 2.1a

# Mean reading scores - OECD countries



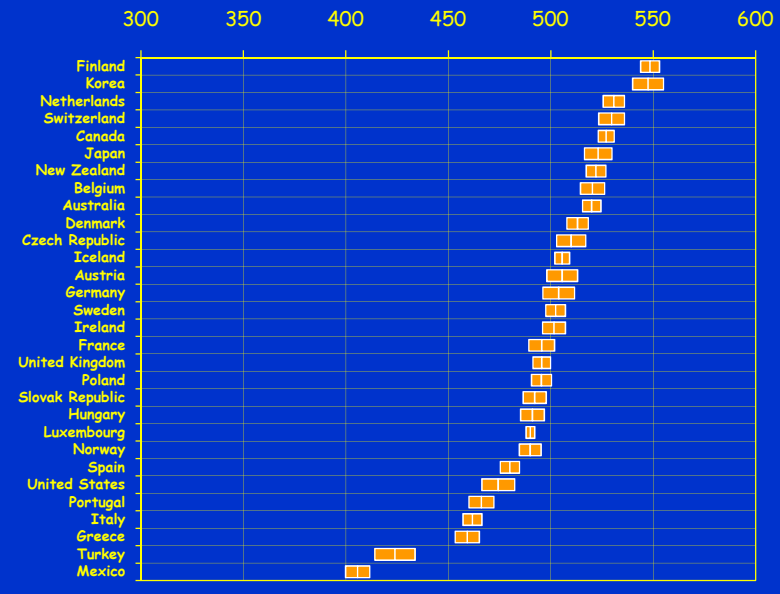

OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World*, Table 6.1c

# Mean reading scores – non-OECD countries



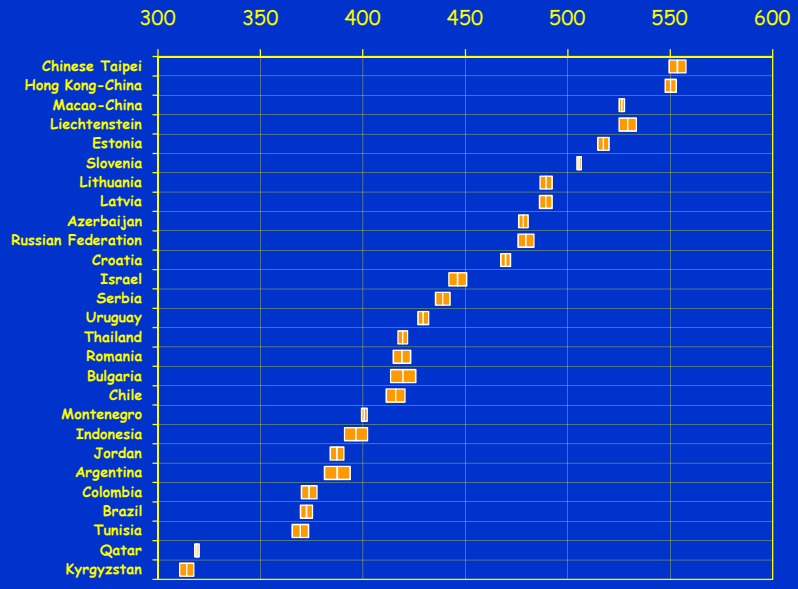

OECD (2007), *PISA 2006 – Science Competencies for Tomorrow's World*, Table 6.1c

# Mean mathematics scores – OECD countries




OECD (2007), *PISA 2006 – Science Competencies for Tomorrow's World*, Table 6.2c

# Mean mathematics scores – non OECD countries




OECD (2007), *PISA 2006 – Science Competencies for Tomorrow's World*, Table 6.2c



# III-Students attitudes to science and their awareness of the life opportunities science may open

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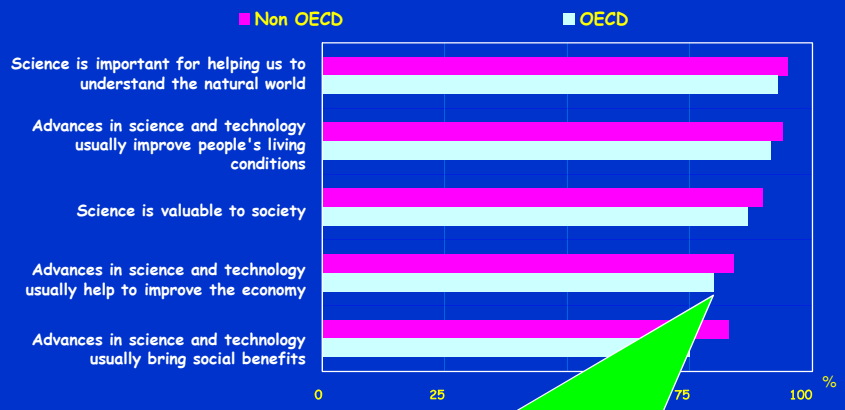
# Overall value of science




Students generally value science but more so in non OECD countries where the belief in the technological potential of science is higher than in OECD countries

OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World, Figure 3.2*

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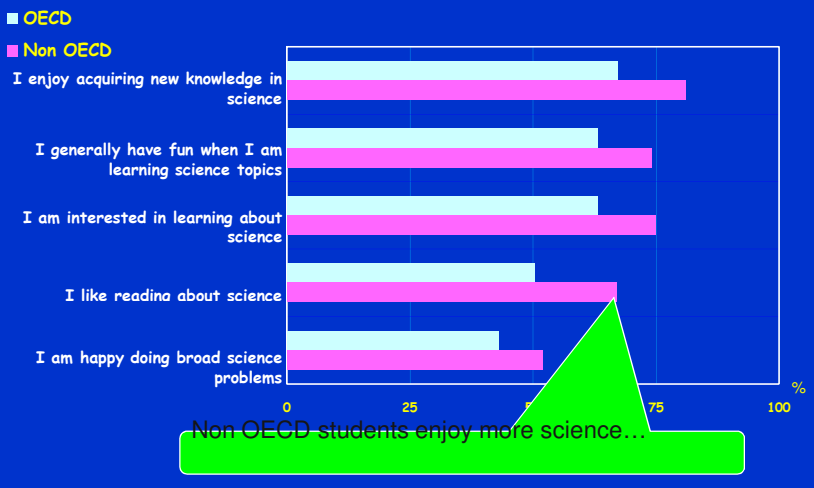
# Enjoyment of science



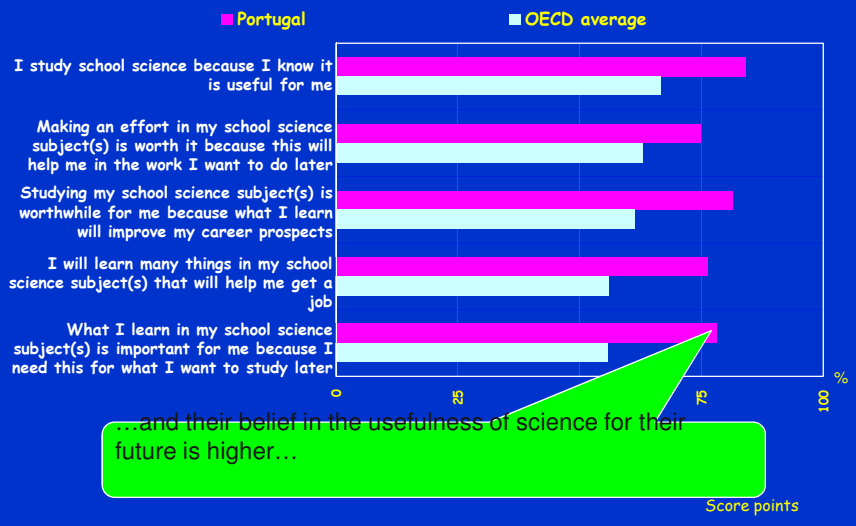

Non OECD students enjoy more science…

Score points

OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World, Figure 3.10*

19

# Instrumental motivation to learn science




OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World, Figure 3.12*

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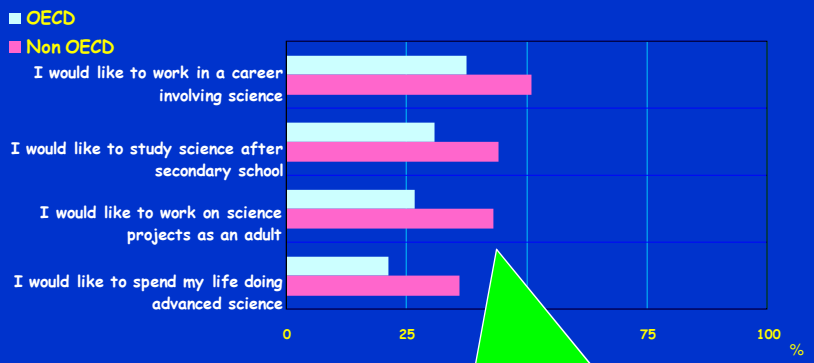
# Personal value of science


OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World, Figure 3.4*

21

# Interest in a scientific career




And their interest in a scientific career, while already low, is interestingly higher than students in OECD countries

OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World, Figure 3.13*

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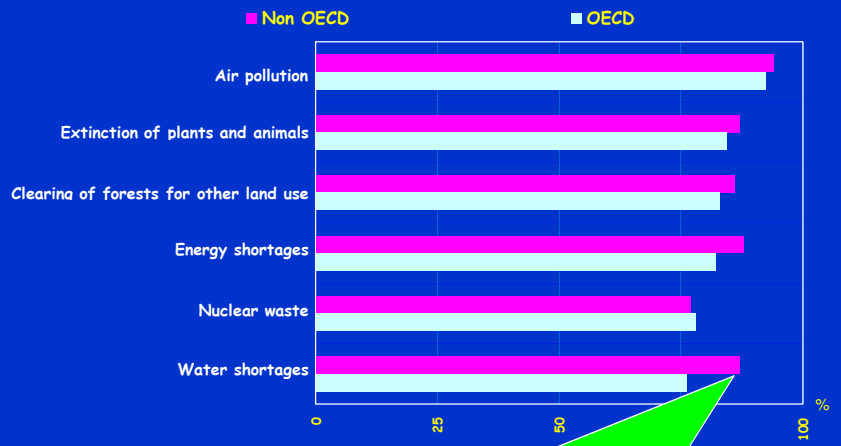
# Concern for environmental issues

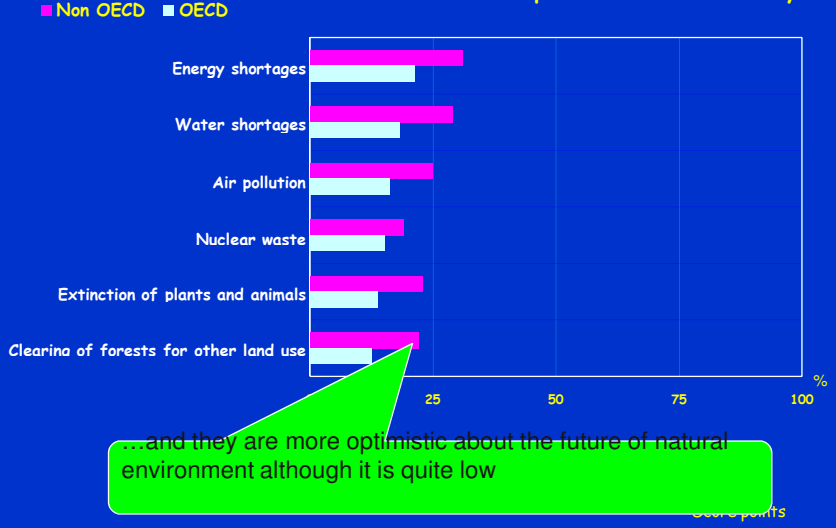



Generally their concern for environmental issues is higher than in OECD countries which is already high

OECD (2007), *PISA 2006 - Science Competencies for Tomorrow's World, Figure 3. 19*

# Concern for the future of the natural environment

Problems associated with the areas below will improve over the next 20 years




…and they are more optimistic about the future of natural environment although it is quite low

OECD (2007), *PISA 2006 – Science Competencies for Tomorrow's World, Figure 3.20*

# Attitudes to science

| | Number of criteria | Occurrences where non OCDE doing better than OECD |
|---|---|---|
| Overall value of science | 5 | 5 |
| Enjoyment of science | 5 | 5 |
| Instrumental motivation | 5 | 5 |
| Personal value of science | 5 | 5 |
| Interest in scientific careers | 4 | 4 |
| Concerns for environment issues | 6 | 5 |
| Optimism about the future of environment | 6 | 6 |

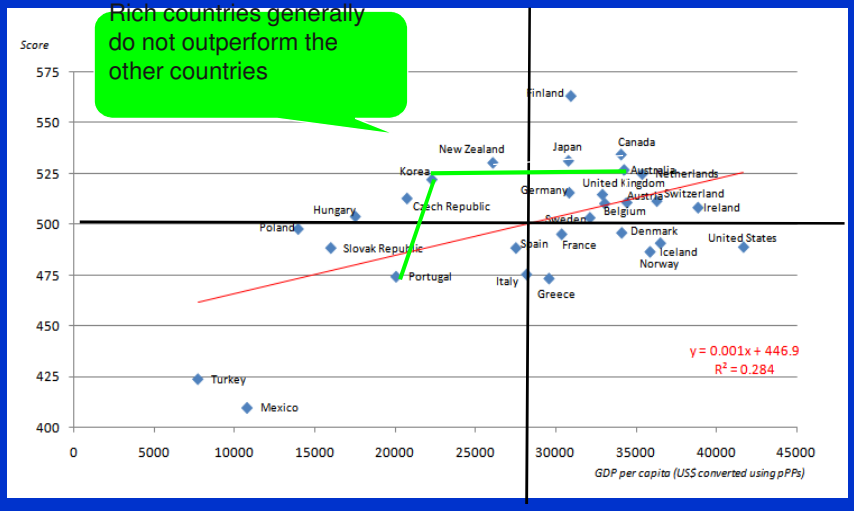
# IV-Key policy issues

## Key issues

1. Are rich countries performing better?
2. Is there a trade-off between quality and equity?
3. Does performance depend upon the schools which are attended?
4. Do private schools make a difference?

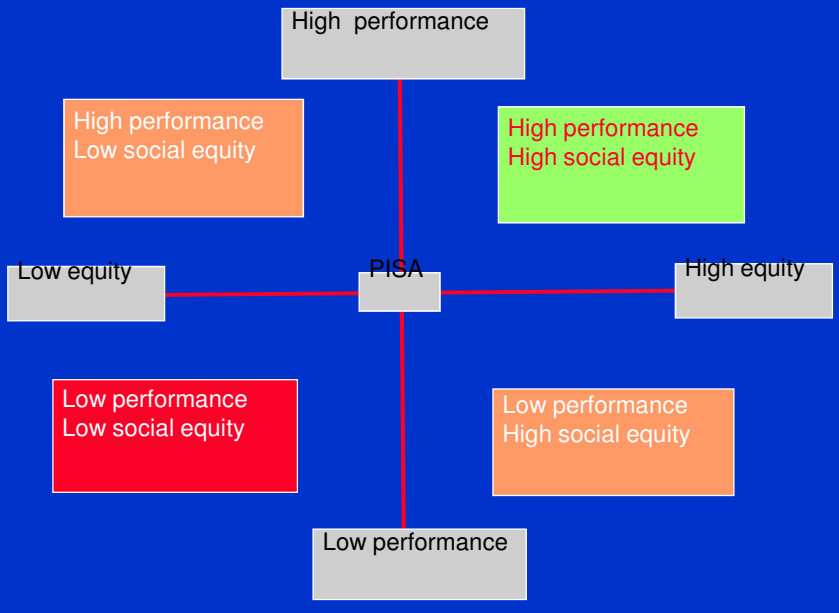
# Are rich countries performing better?

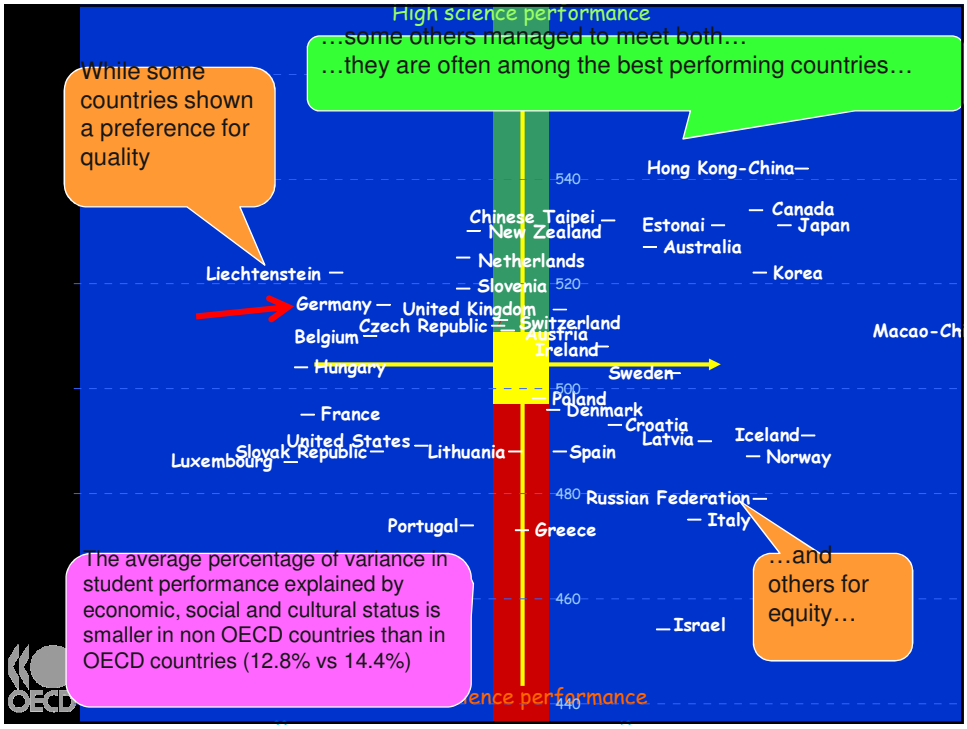
## National income per capita and performance in PISA




OECD (2007), *PISA 2006 – Science Competencies for Tomorrow's World*, Figure 2.12b

# Trade-off between quality and equity?






# Number of countries achieving both quality and equity

## Benchmark: OECD average

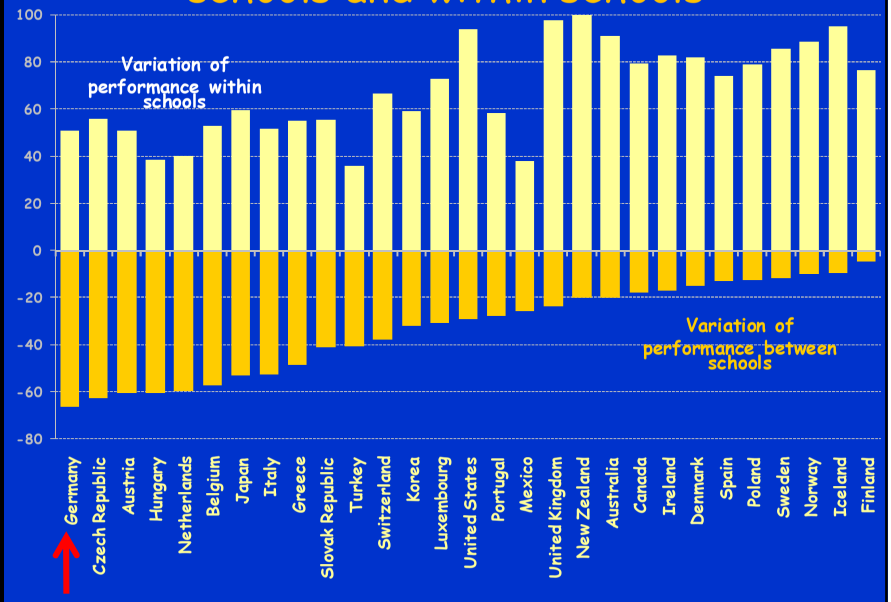
Seven OECD countries = Australia, Canada, Finland, Ireland, Japan, Korea, UK

Four non OECD countries: Chinese Taipei, Estonia, Hong Kong China, Macao China

## Benchmark: non OECD average

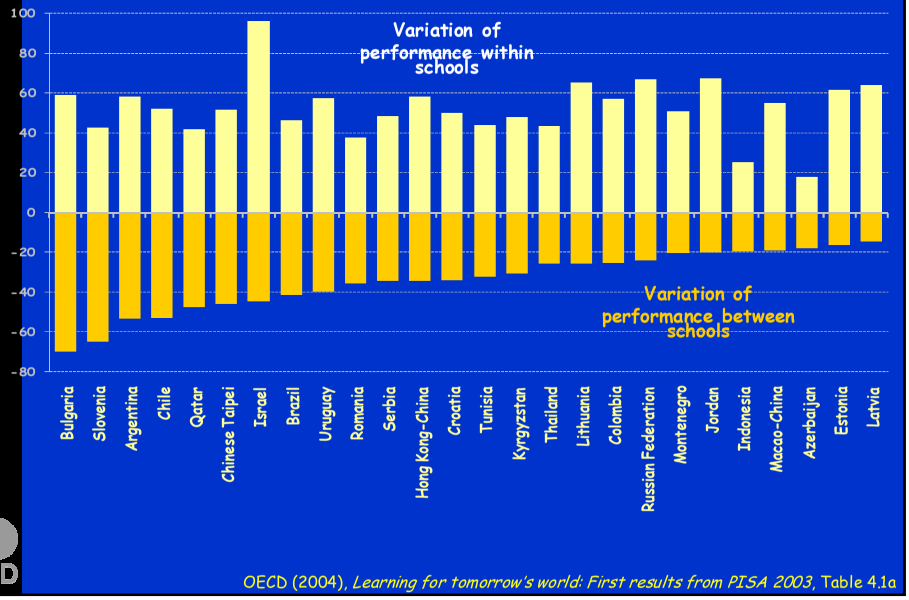
Nine non OECD countries: Croatia, Estonia, Hong Kong China, Israel, Jordan, Latvia, Macao China, Russia, Chinese Taipei

# Variation in student performance between schools and within schools




OECD (2004), *Learning for tomorrow's world: First results from PISA 2003*, Table 4.1a


# Variation in student performance between schools and within schools



OECD (2004), *Learning for tomorrow's world: First results from PISA 2003*, Table 4.1a

# Variation in student performance

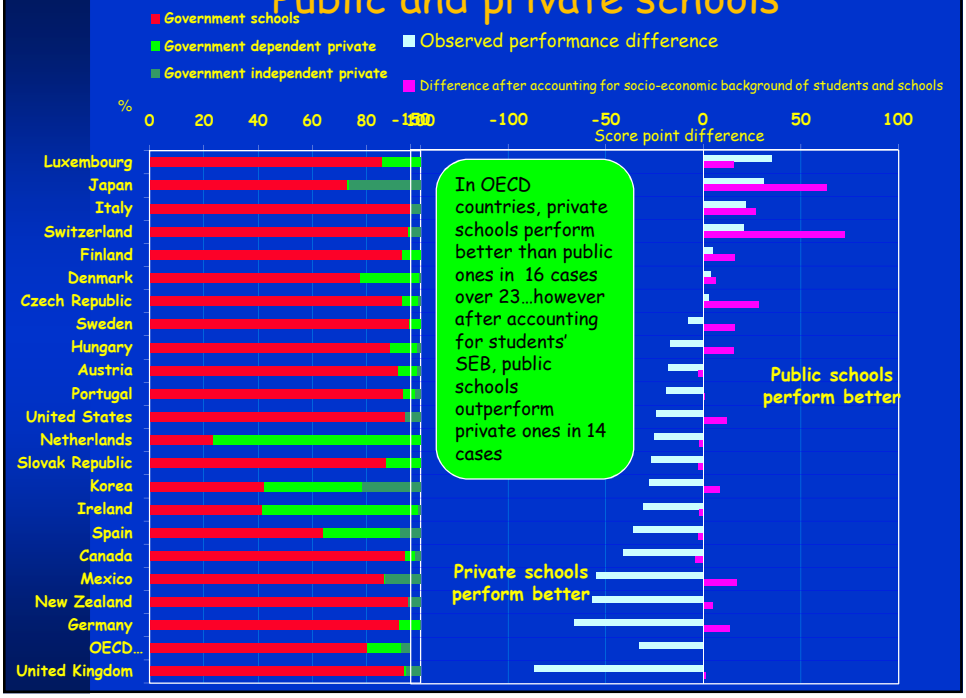
| | OECD | Non-OECD |
|---|---|---|
| Total average variation | 100 | 86.3 |
| Variation between schools | 61 | 34 |
| Variation within schools | 113 | 61 |
| Number of countries where variation between schools is higher than within schools | 21 (72%) | 23 (85%) |

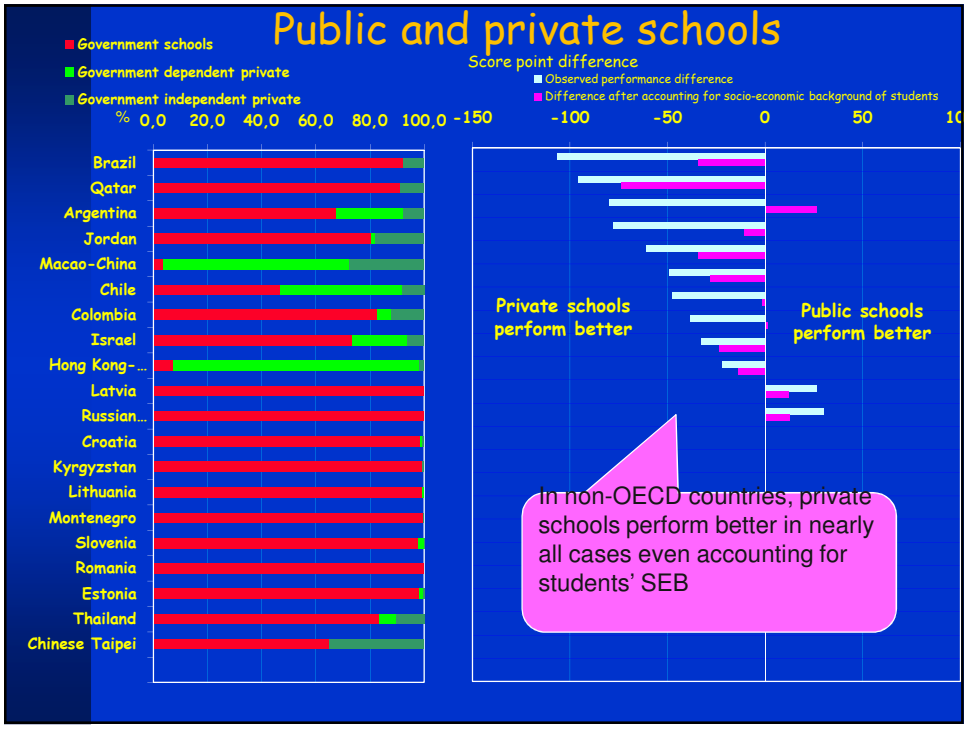
Total variation is smaller in non-OECD countries…

;;;and variation between schools is also smaller in non-OECD countries…

…but the number of countries where variation between schools if higher than within schools is larger in non-OECD countries

# Public and private schools








# V- Education based development strategy

# Education and economic development

Two models

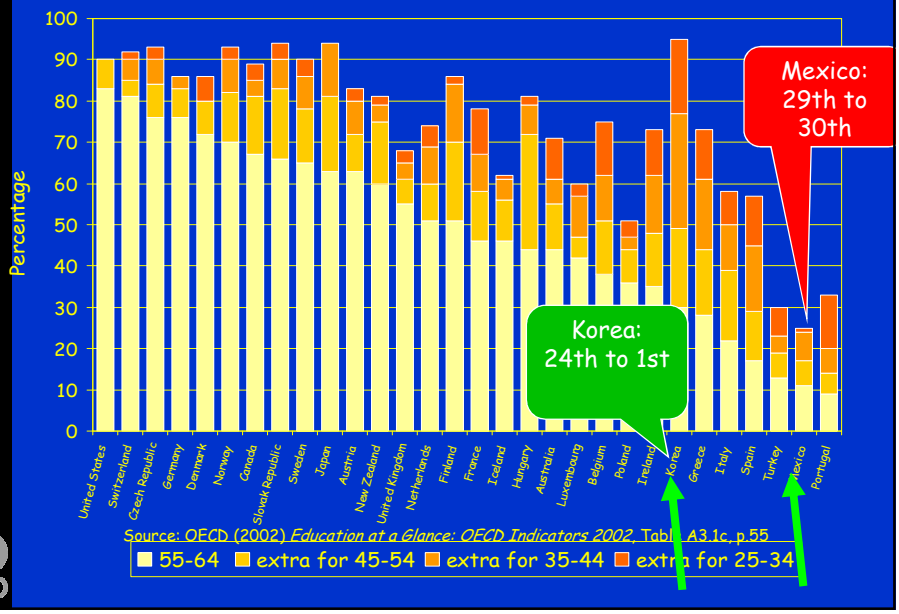
1. Some countries (East Asia) have massively invested in school education
   - e.g. in Korea public expenditure on education has been focusing on primary and secondary sectors
   - This had a direct effect on productivity in manufacturing industry
   - Higher education was provided by sending students abroad
   - The result was a mass education of good quality and high equity
   - In the second stage, investment was made in higher education


# Education and economic development

In other countries (e.g. some Latin American ones, India), the emphasis has been on higher education

- e.g. in Venezuela 43% of expenditure on education is on higher education
- The effect on the economy is low, graduates do not easily find jobs
- The result is an elitist education of average quality and low equity

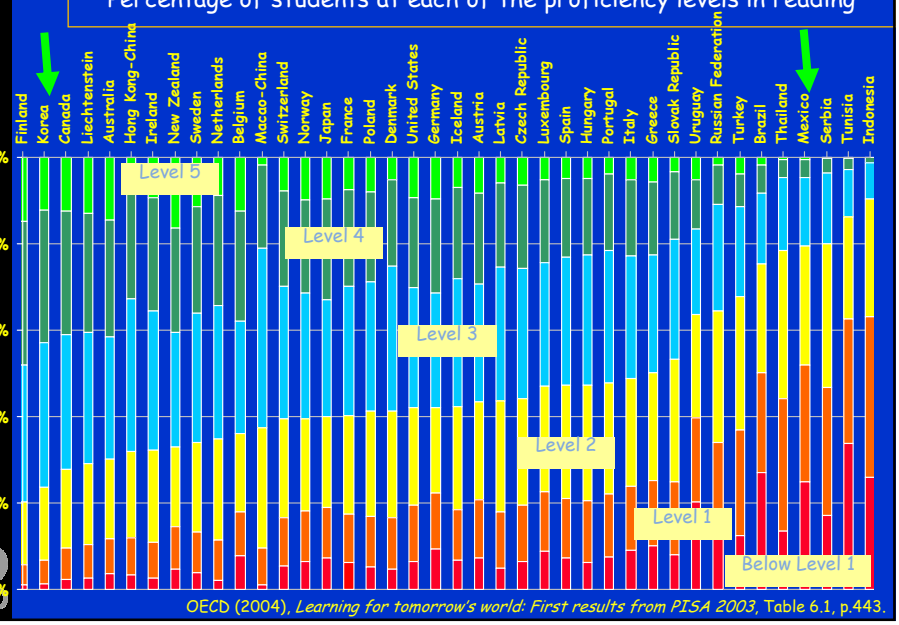
# Attainment of upper secondary education




Source: OECD (2002) *Education at a Glance: OECD Indicators 2002*, Table A3.1c, p.55

# Proficiency levels in reading (PISA 2003)

Percentage of students at each of the proficiency levels in reading




OECD (2004), *Learning for tomorrow's world: First results from PISA 2003*, Table 6.1, p.443.

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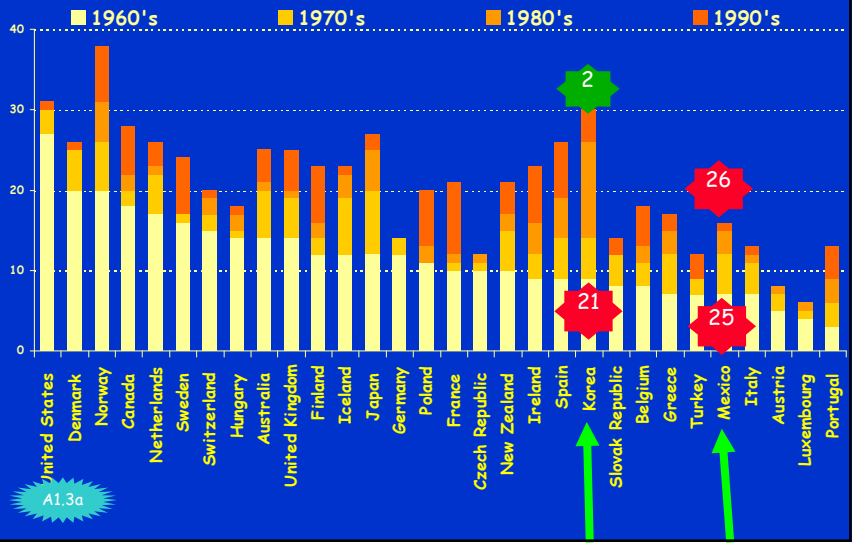
# Access to higher education

Growth in university-level qualifications
Approximated by the percentage of persons with ISCED 5A/6 qualfication in the age groups 55-64, 45-55, 45-44 und 25-34 years (2003)

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# VI- Conclusions

# Conclusions

The OECD countries have a educational competitive advantages over on OECD countries

- The number of high performing students in OECD is twice as large as the non OECD's one
- The number of very low performing students in non OECD is twice as large as the OECD's one

Yet, in OECD countries

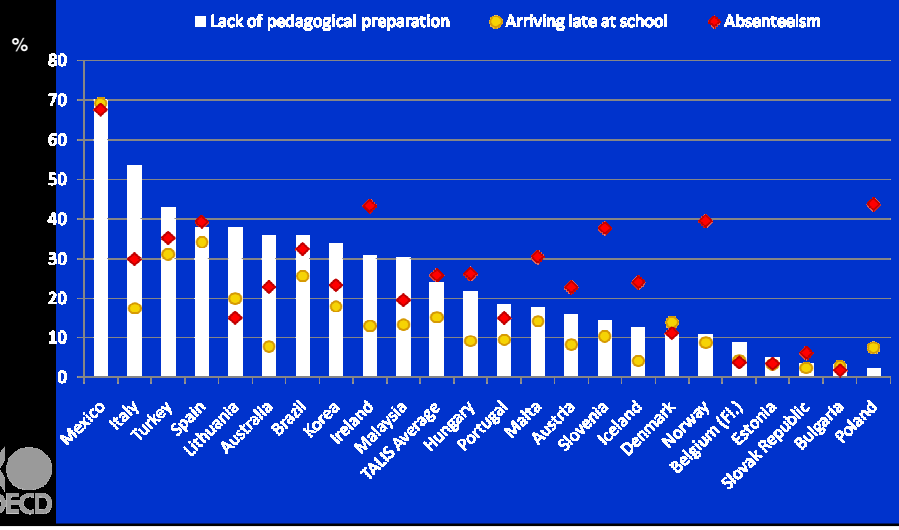
- Educational systems are not always better performing and are not more equitable
- SES has more influence on performance than in non OECD countries

In addition in non OECD countries students attitudes to science are more positive

Therefore in non OECD countries efforts should be made to improve access and teacher and teaching quality notably in public schools

# What principals feel about instruction in the classroom

Percentage of teachers whose school principal reported that the following teacher behaviours hindered the provision of instruction in their school a lot or to some extent (2007-08)



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# Conclusions

For economic development purposes, priority should be given to primary, then secondary and finally to tertiary education

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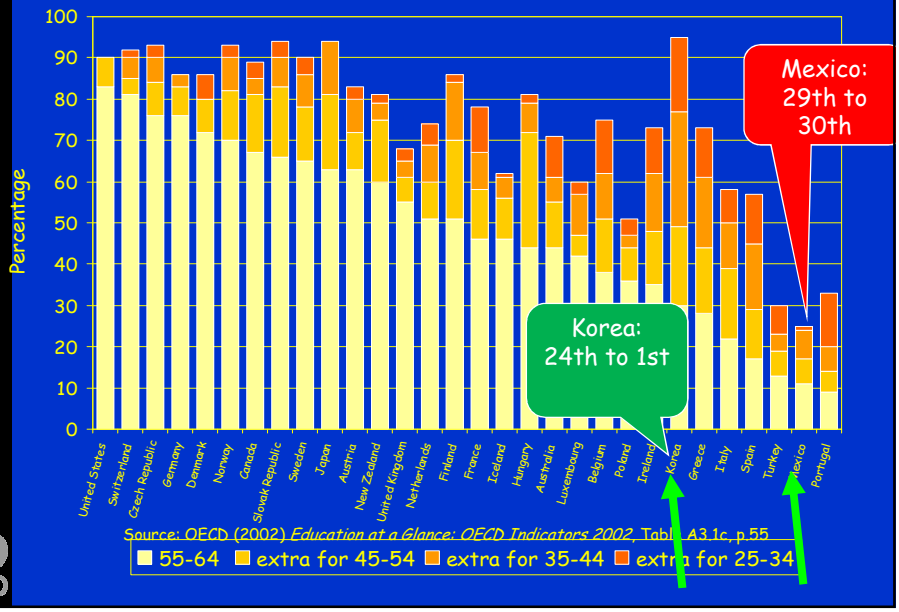
# Attainment of upper secondary education




Source: OECD (2002) *Education at a Glance: OECD Indicators 2002*, Table A3.1c, p.55

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Bernard.hugonnier@oecd.org