



# Seeing US education through the prism of international comparisons

The OECD Programme for International Student Assessment (PISA)

New Mexico

**Andreas Schleicher**

OECD Director for Education and Skills



# PISA in brief

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## **Every three years since 2000, over half a million students...**

- representing 15-year-olds in now over 80 countries

## **... take an internationally agreed 2-hour test...**

- that goes beyond whether students can reproduce what they were taught to assess students' capacity to extrapolate from what they know and creatively use and apply their knowledge
- Focus on mathematics, science and reading
- Problem-solving, collaborative problem-solving, creative thinking, financial literacy

## **... and respond to questions on...**

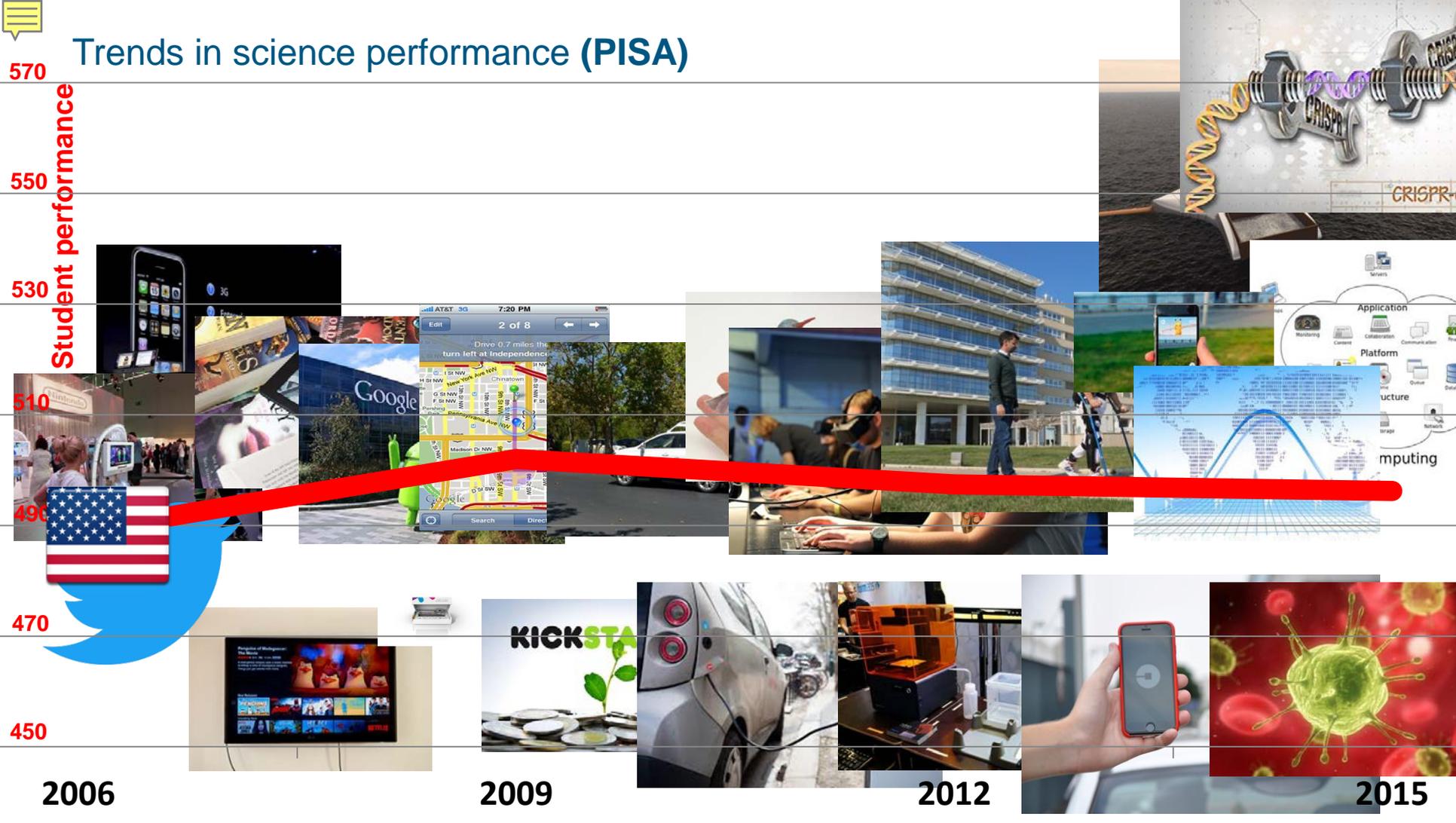
- their personal background, their schools, their well-being and their motivation

## **Teachers, principals, parents and system leaders provide data on:**

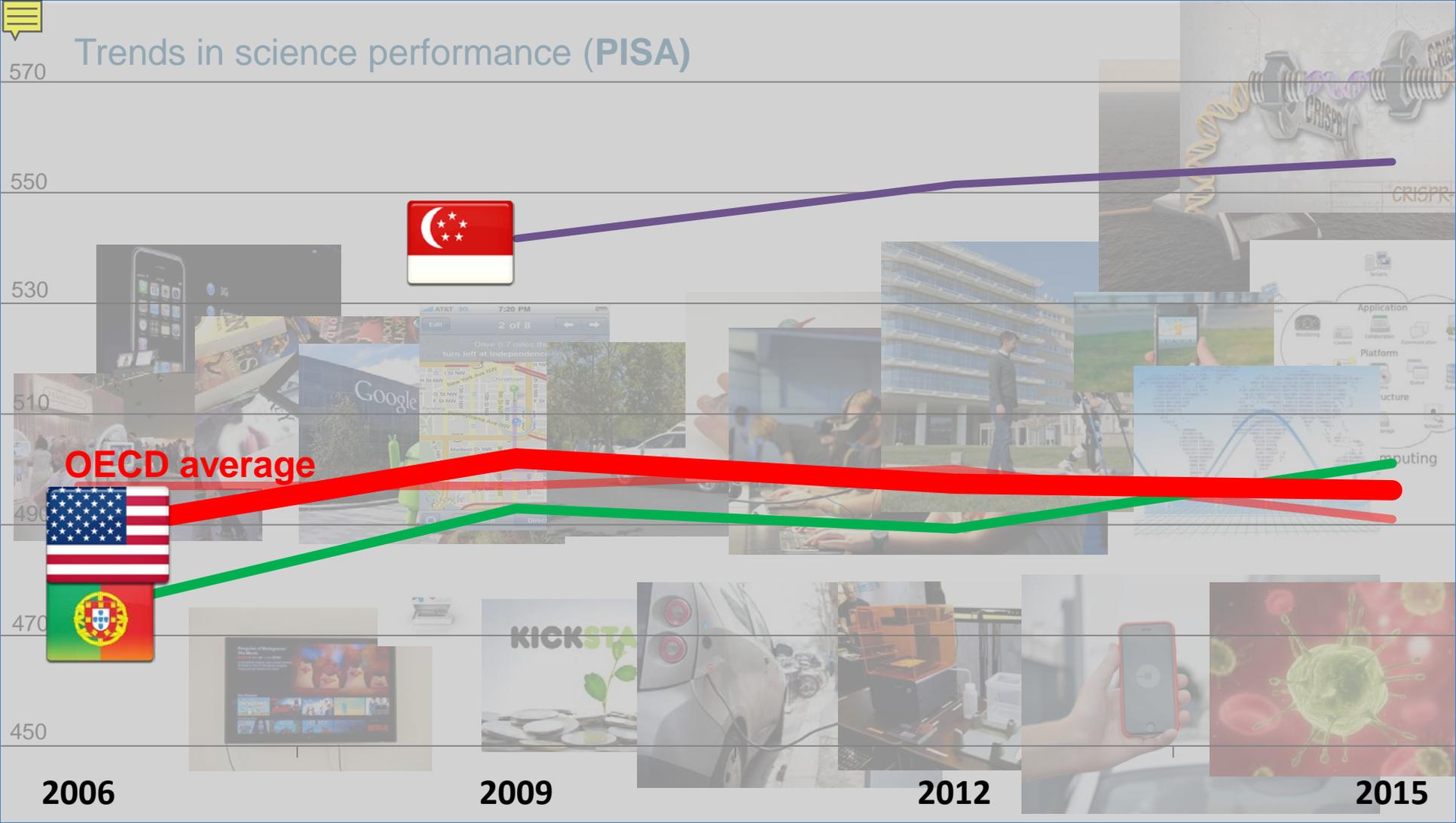
- school policies, practices, resources and institutional factors that help explain performance differences



# Trends in science performance (PISA)



# Trends in science performance (PISA)



570

550

530

510

490

470

450

2006

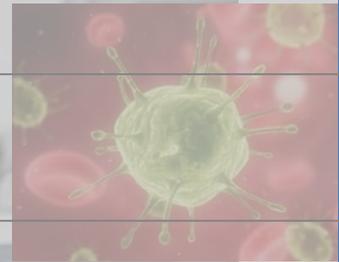
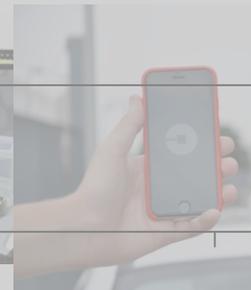
2009

2012

2015



OECD average



# Poverty is not destiny – Learning outcomes

by international deciles of the PISA index of economic, social and cultural status (ESCS)

Figure I.6.7

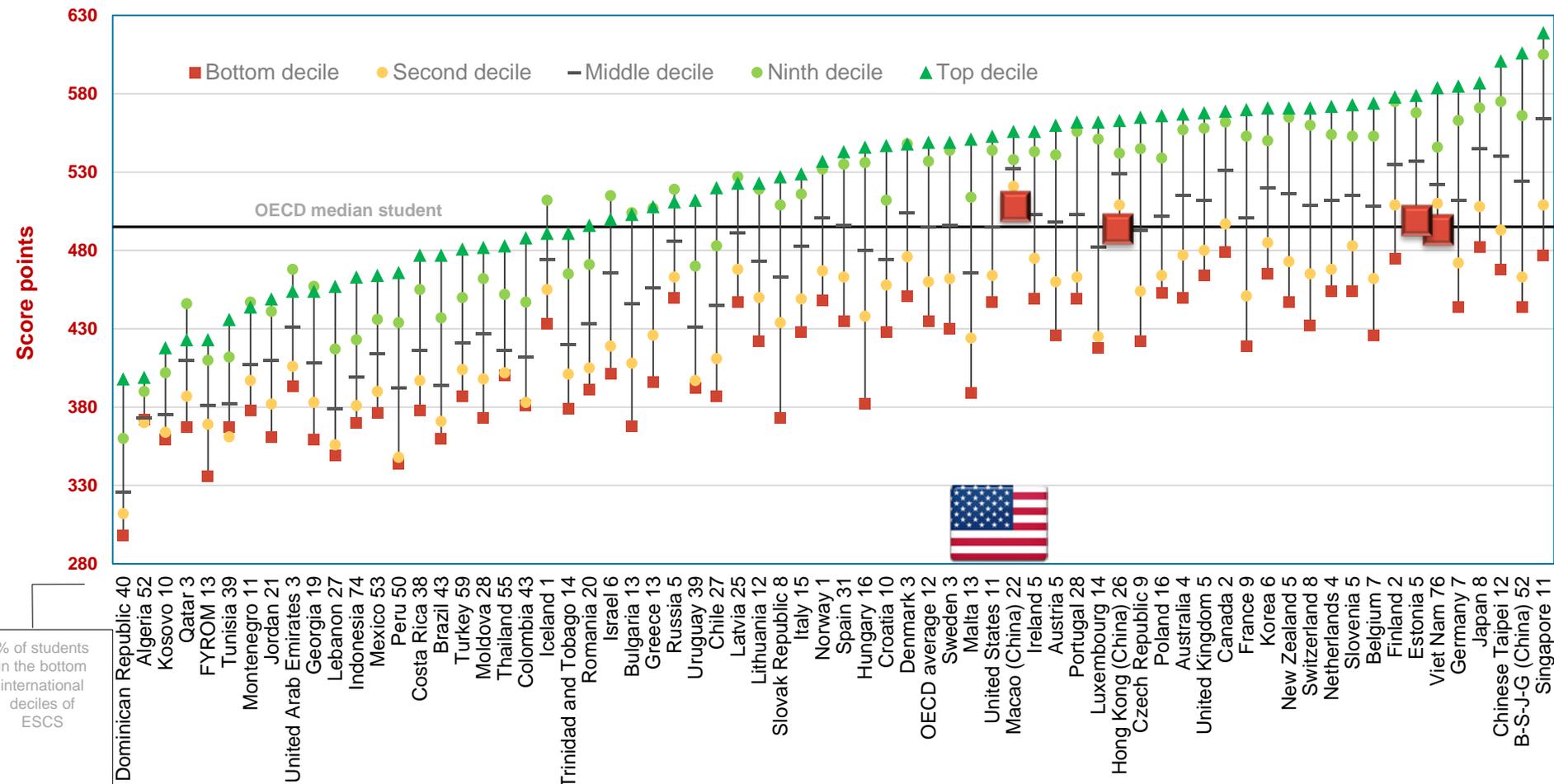
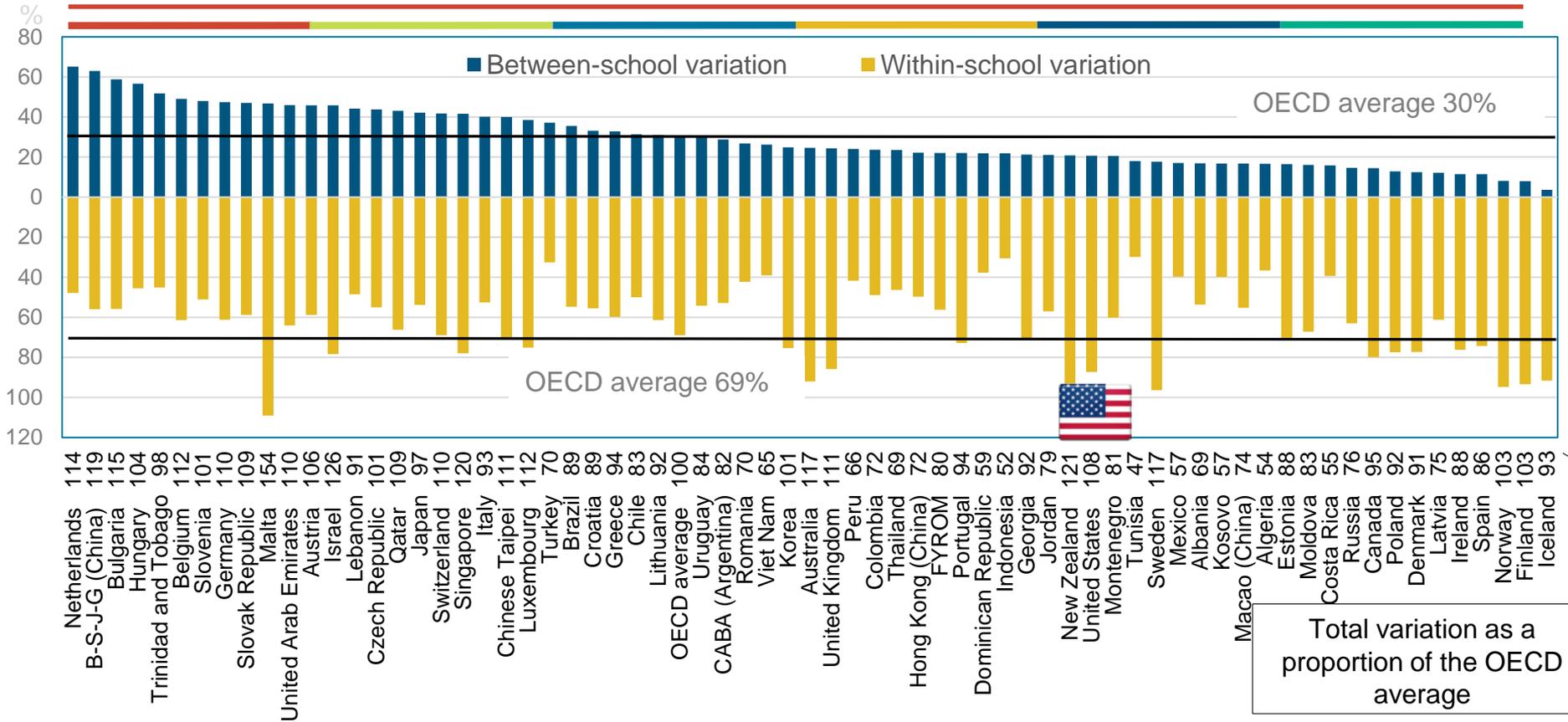


Figure I.6.11

# Variation in science performance between and within schools



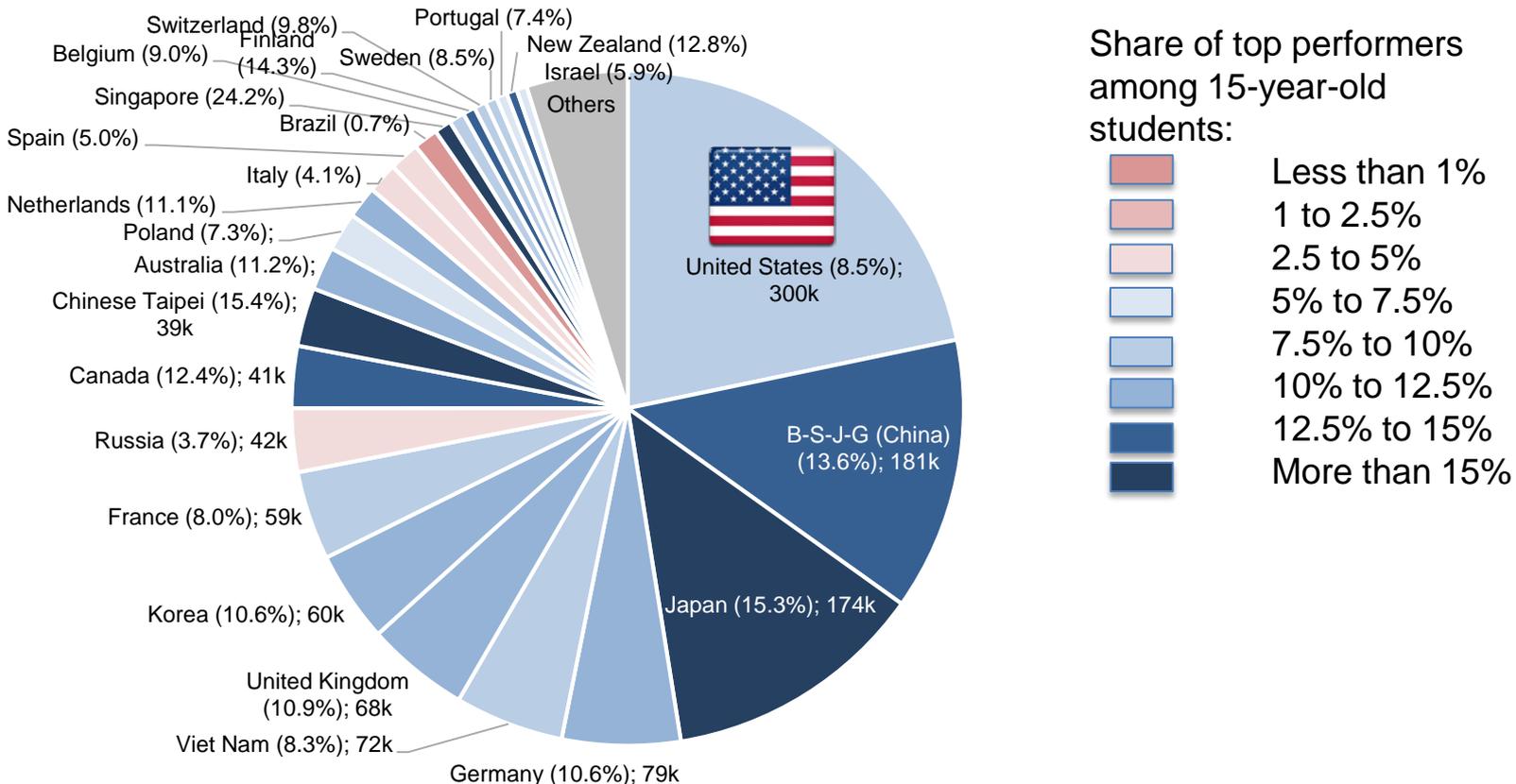
Total variation as a proportion of the OECD average

# Top performers

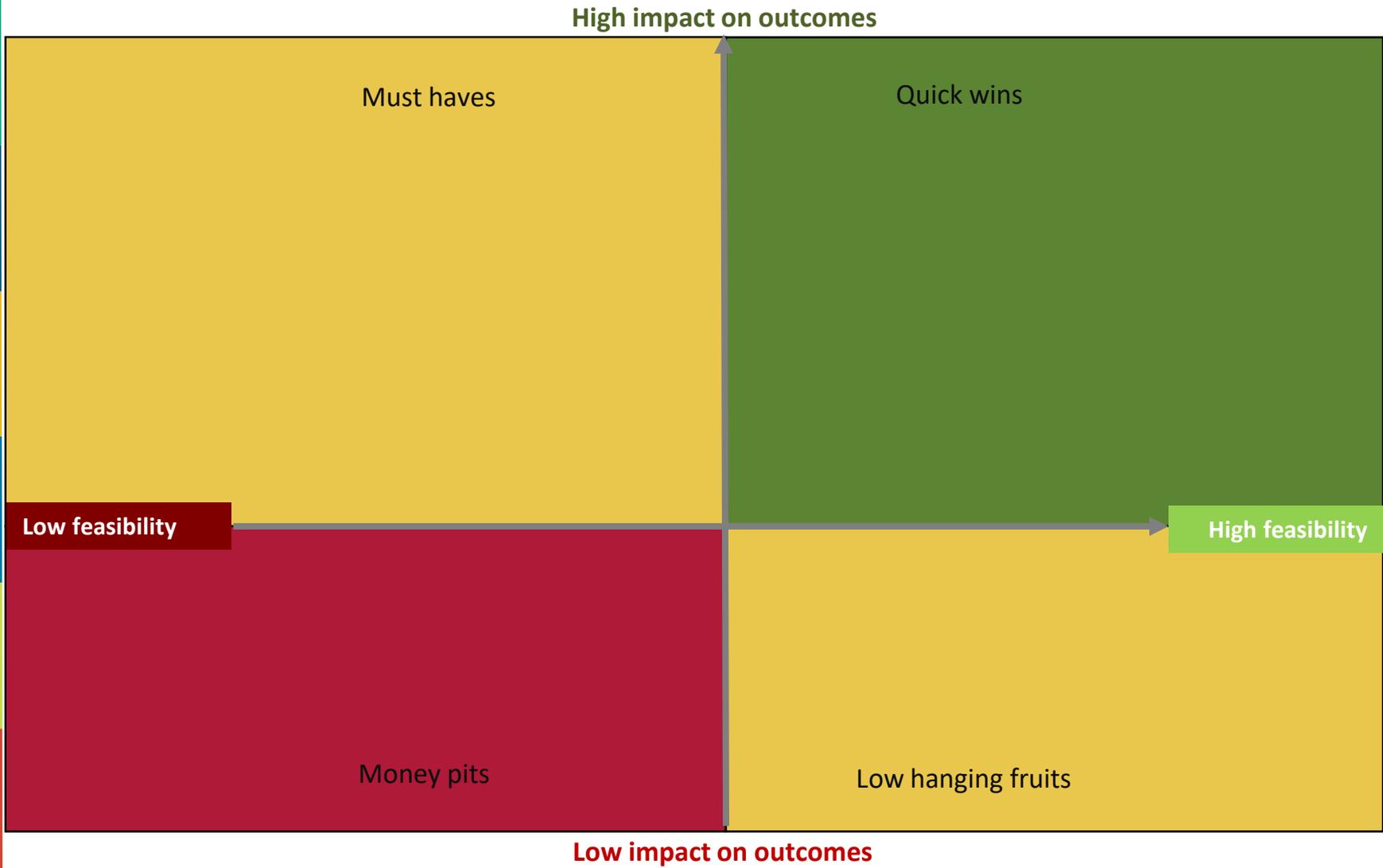
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Students who can develop and work with models for complex science situations, identifying constraints and specifying assumptions. They can select, compare and evaluate appropriate problem-solving strategies for dealing with complex problems related to these models.

# The global pool of top performers: A PISA perspective



Lessons from PISA



High impact on outcomes

Must haves

Quick wins

Low feasibility

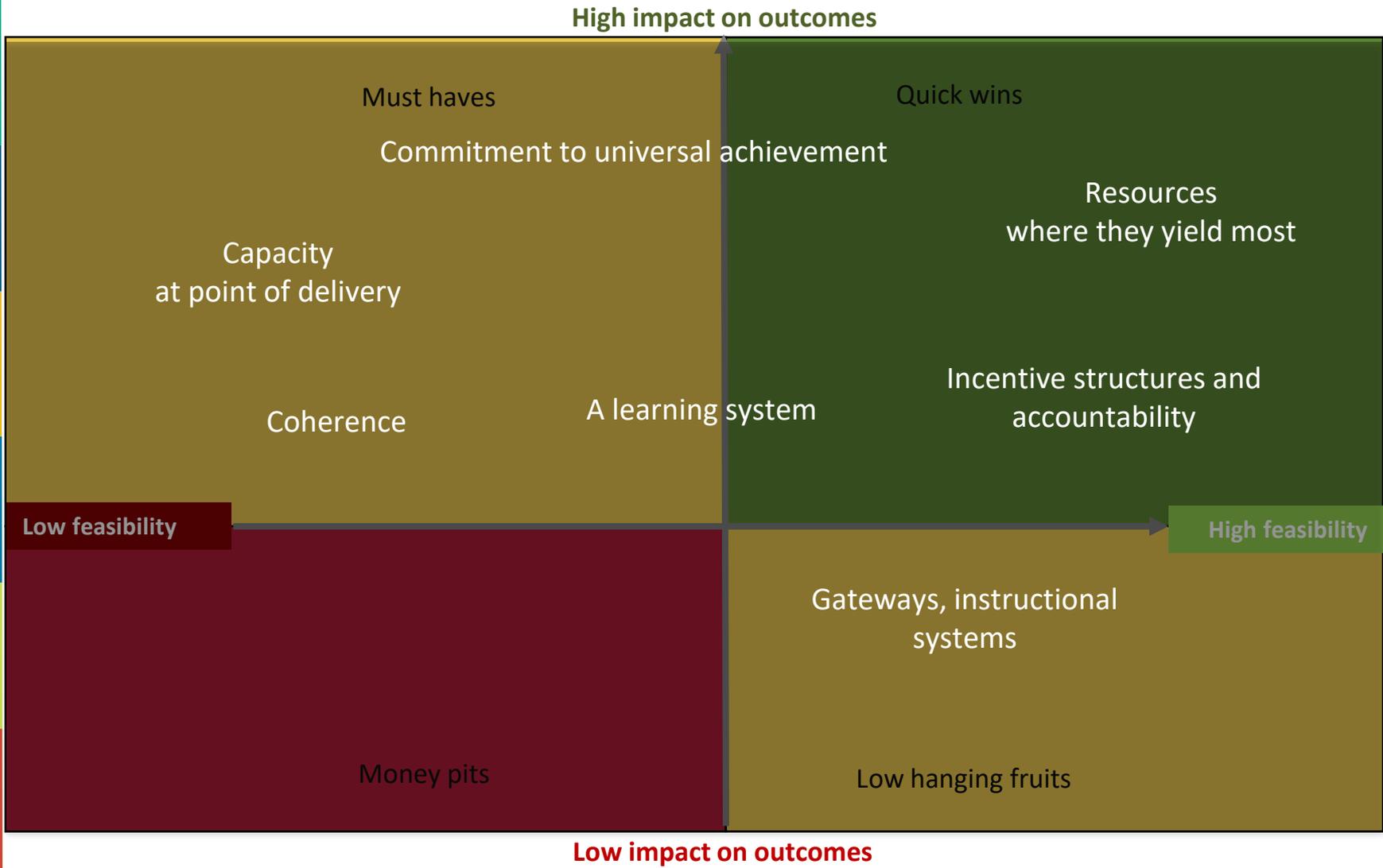
High feasibility

Money pits

Low hanging fruits

Low impact on outcomes

Lessons from PISA



# Spending per student from the age of 6 to 15 and science performance

Figure II.6.2

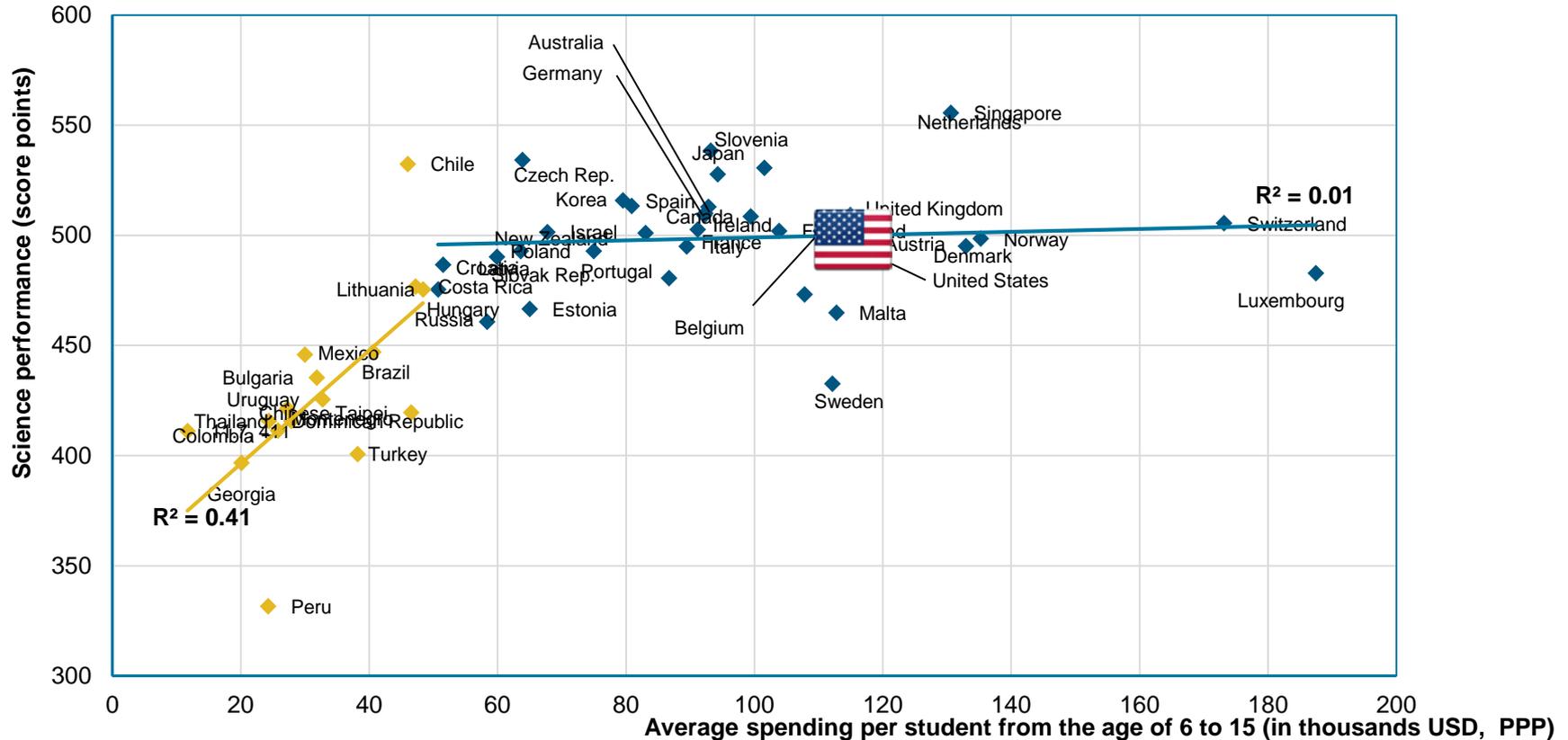
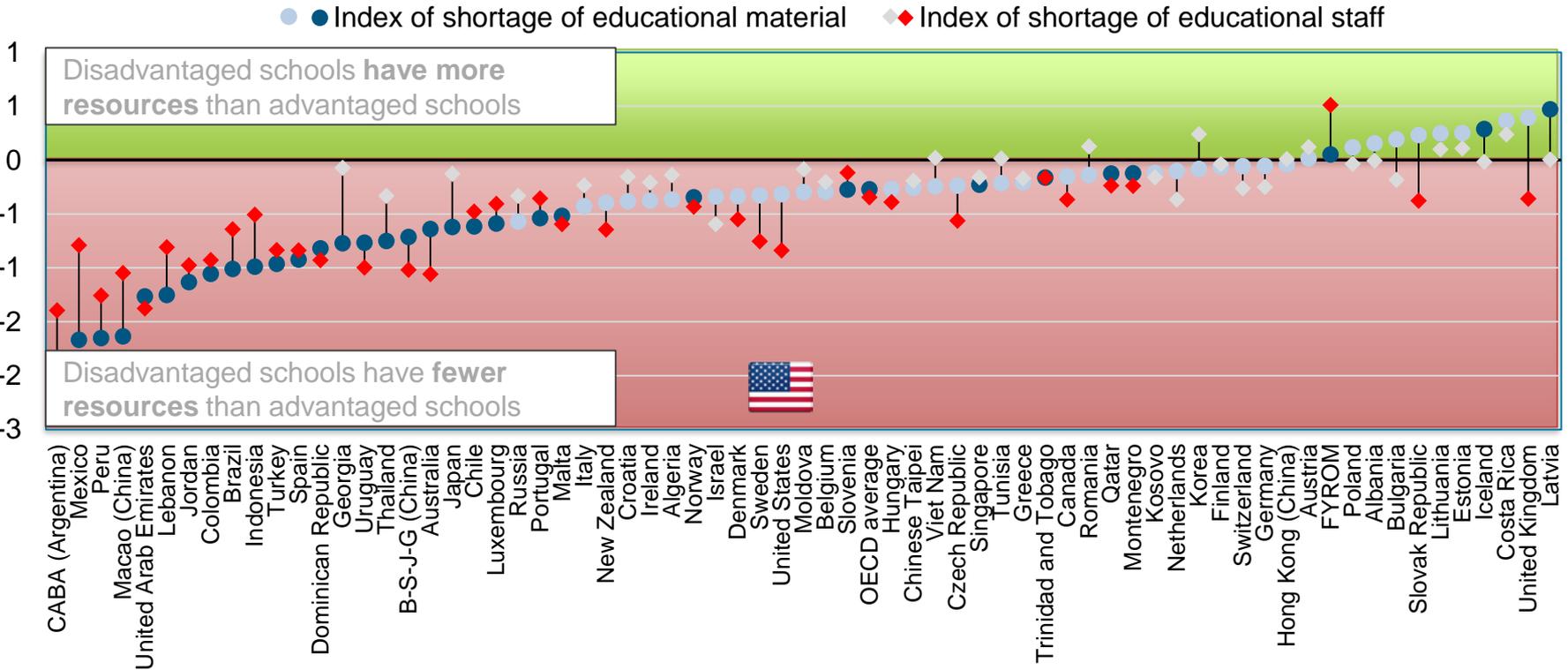


Figure I.6.14

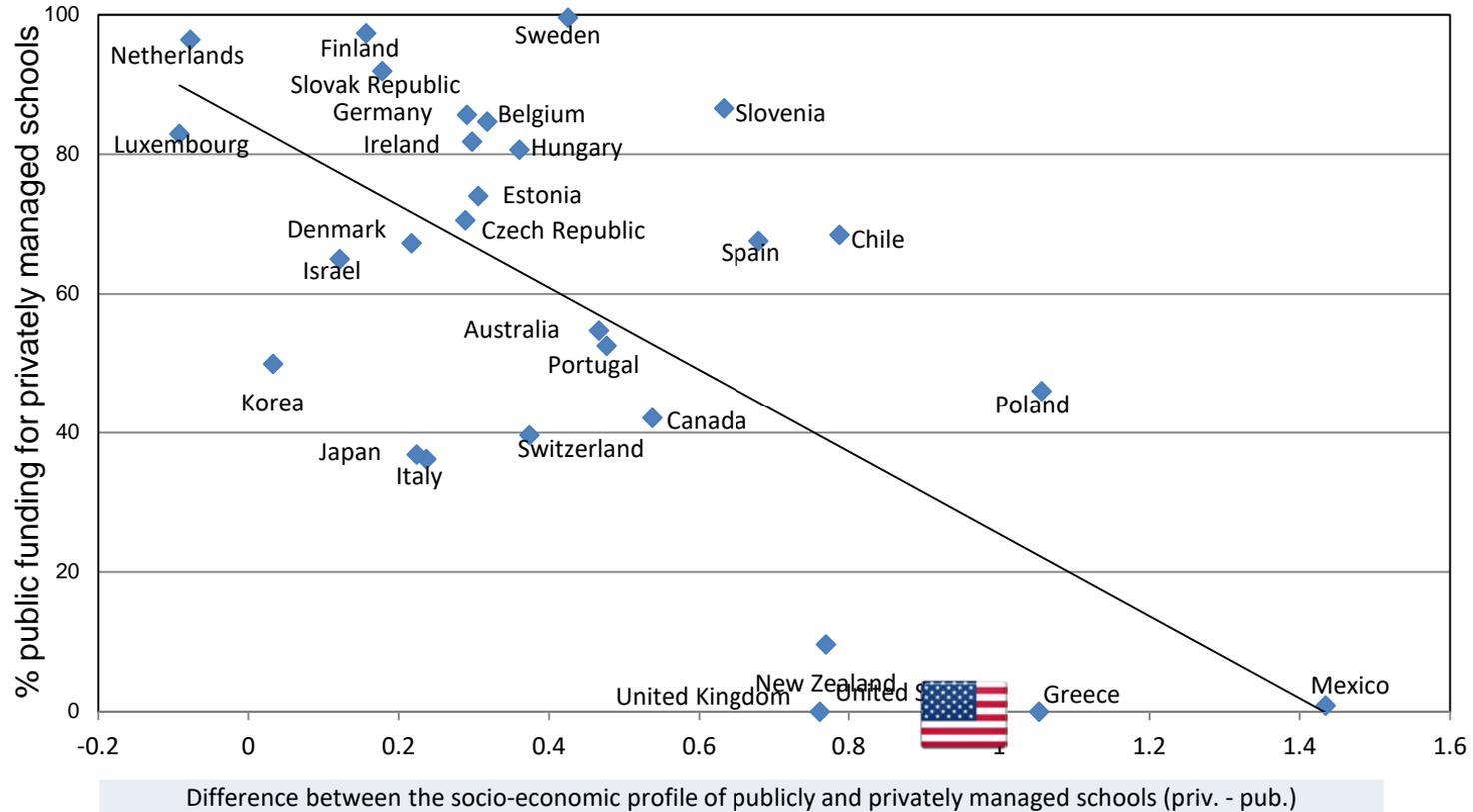
# Differences in educational resources

## between advantaged and disadvantaged schools

Mean index difference between advantaged and disadvantaged schools



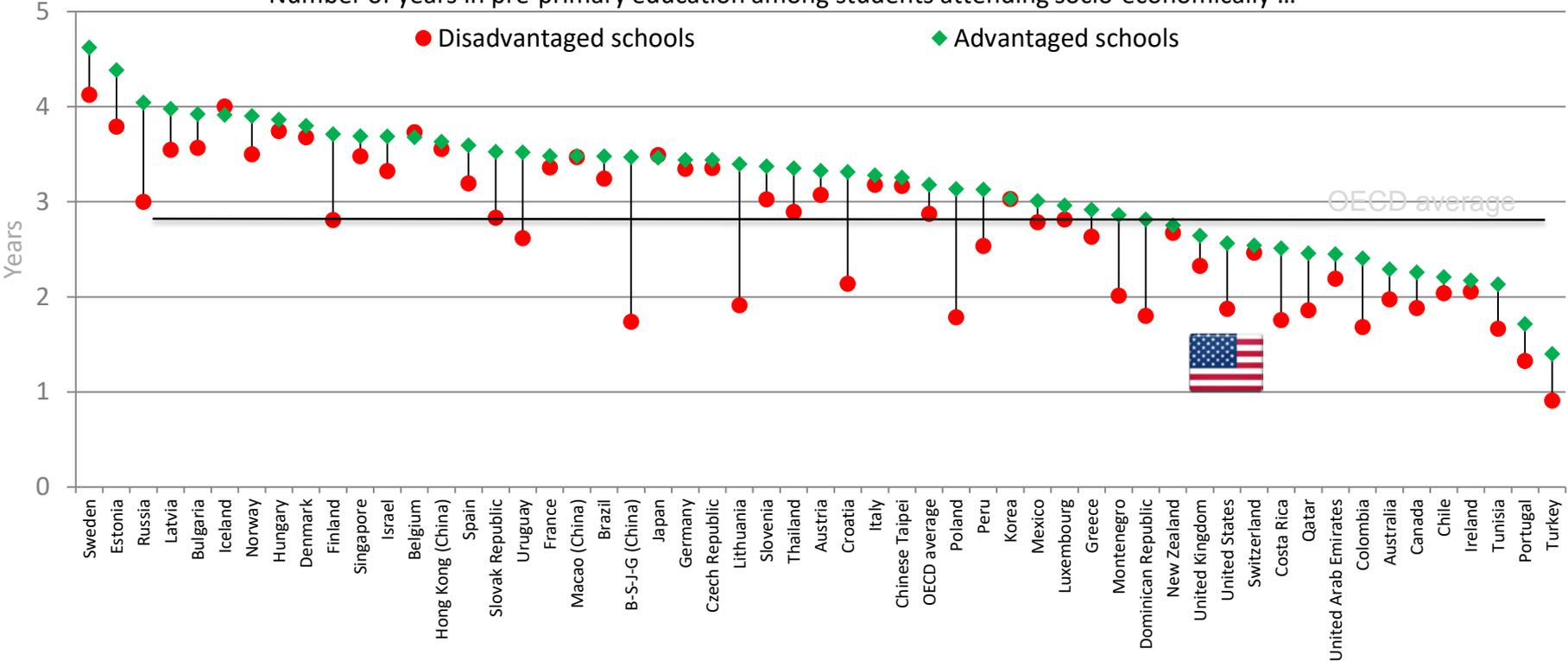
# Countries that invest more public funds in privately managed schools tend to have less of a difference between the socio-economic profiles of publicly and privately managed schools



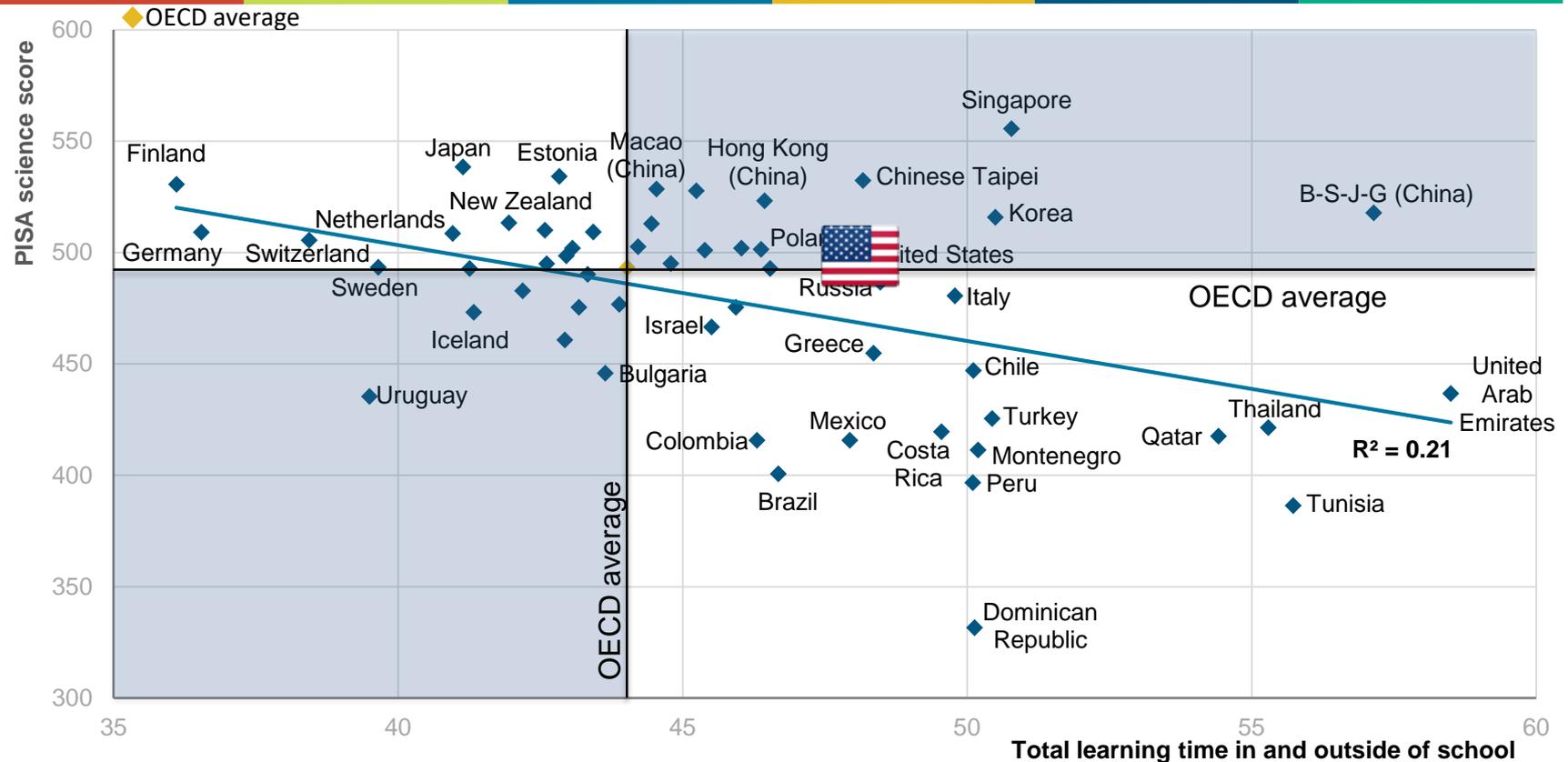


# Attendance at pre-primary school by schools' socio-economic profile

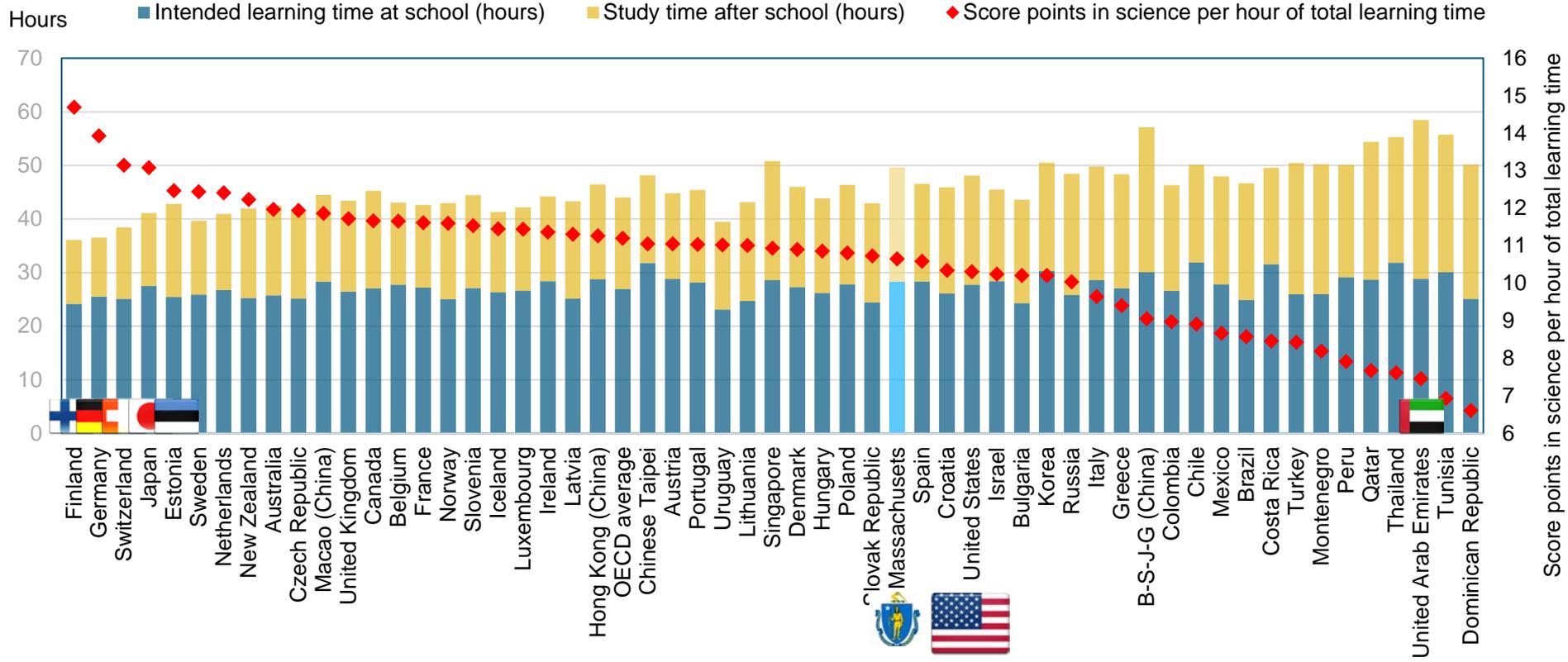
Number of years in pre-primary education among students attending socio-economically ...



# Learning time and science performance



# Learning time and science performance





**What teachers say  
and what teachers do**



**95% of teachers: My role as a teacher is to facilitate students own inquiry**



**82%: Students learn best  
by findings solutions on their own**

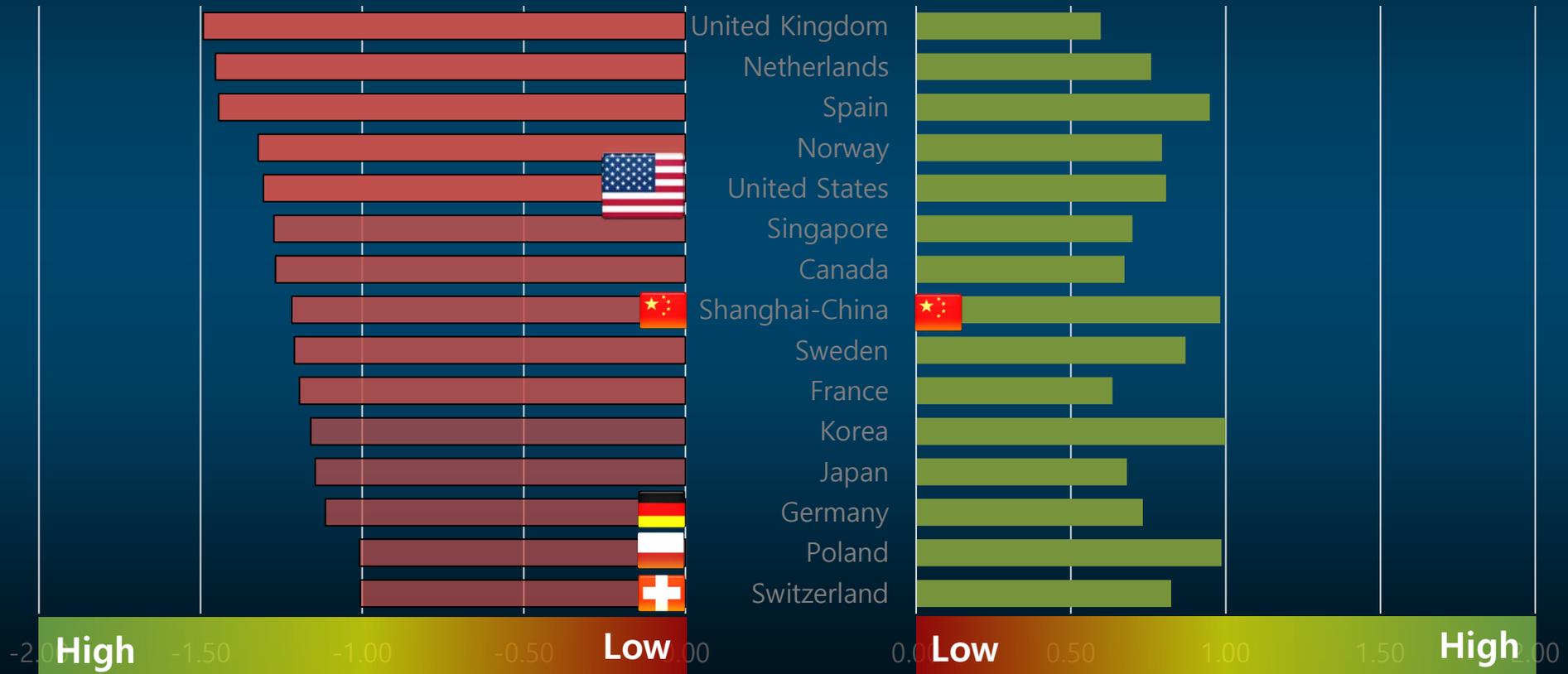


**85%: Thinking and reasoning is more important than curriculum content**

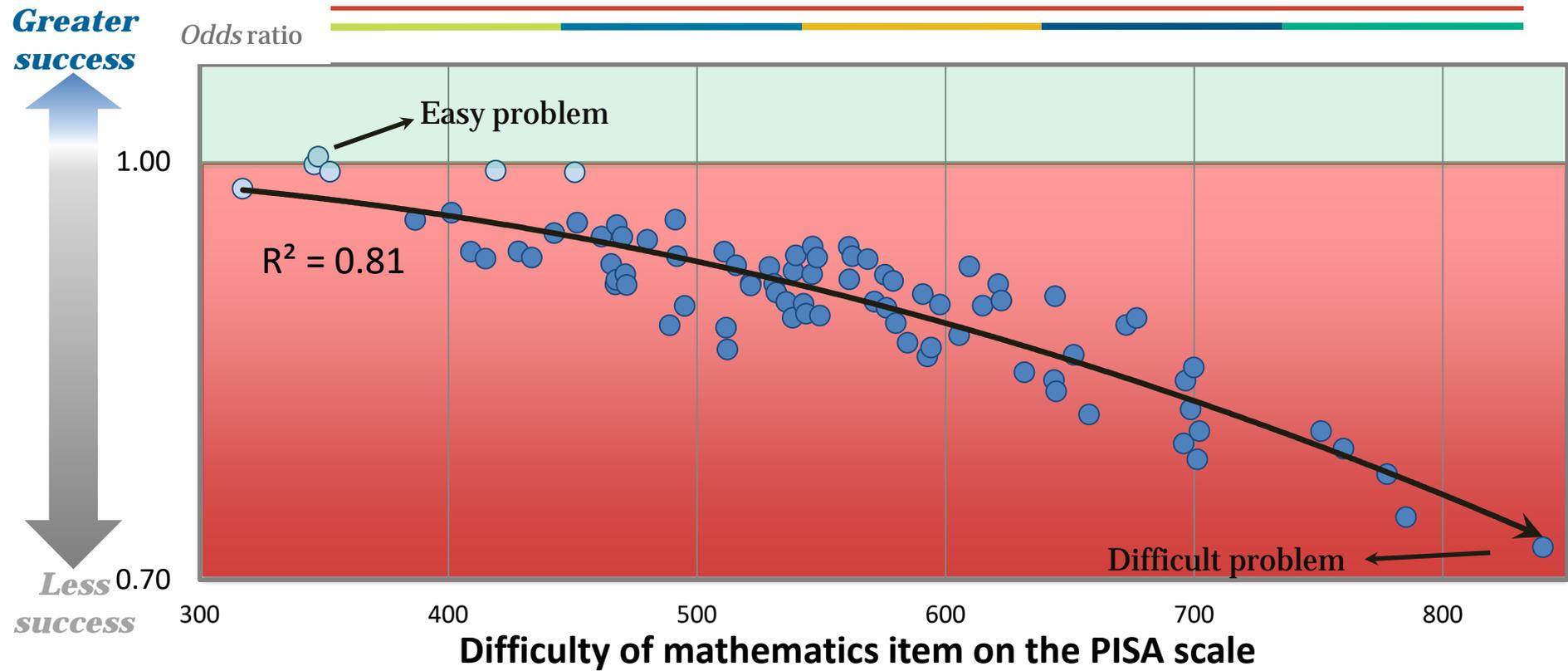


Prevalence of **memorisation**  
rehearsal, routine exercises, drill and  
practice and/or repetition

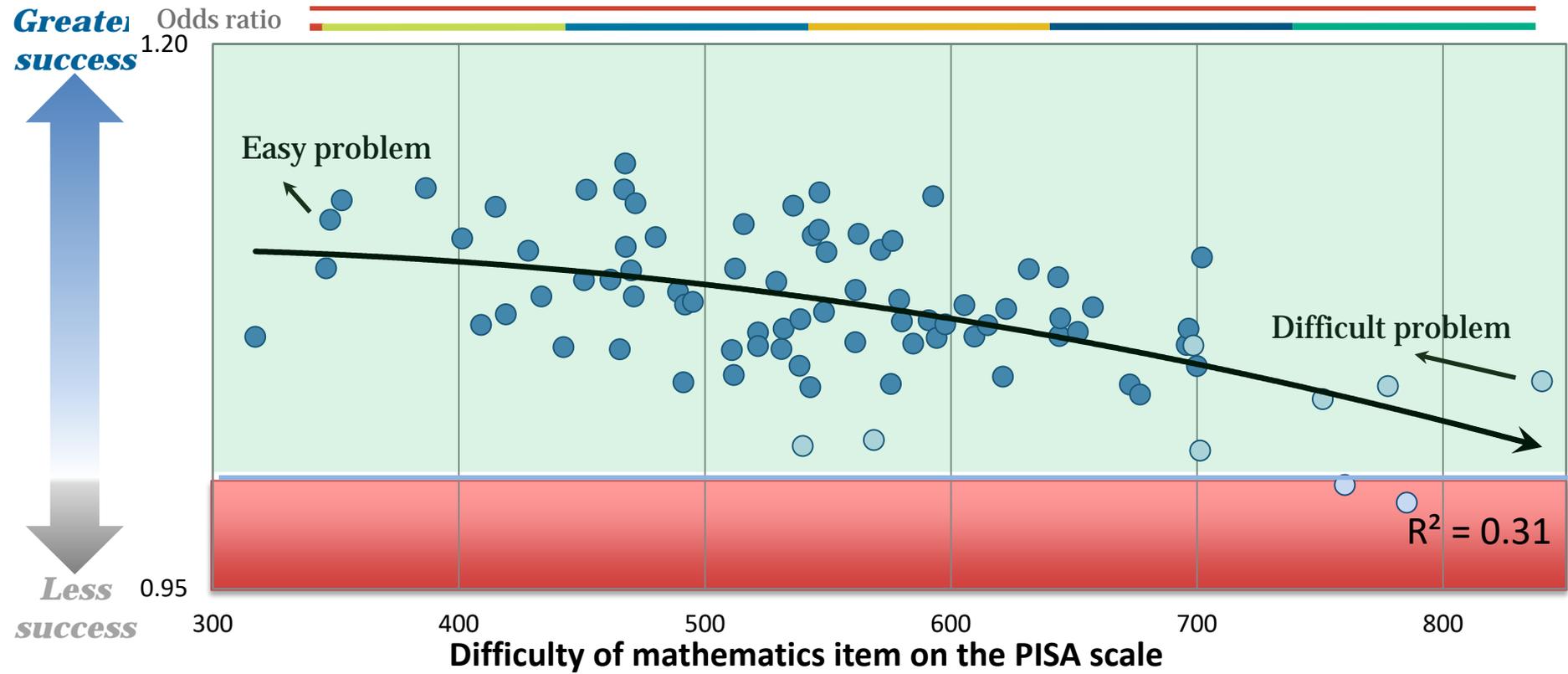
Prevalence of **elaboration**  
reasoning, deep learning, intrinsic  
motivation, critical thinking,  
creativity, non-routine problems



# Memorisation is less useful as problems become more difficult (*OECD average*)

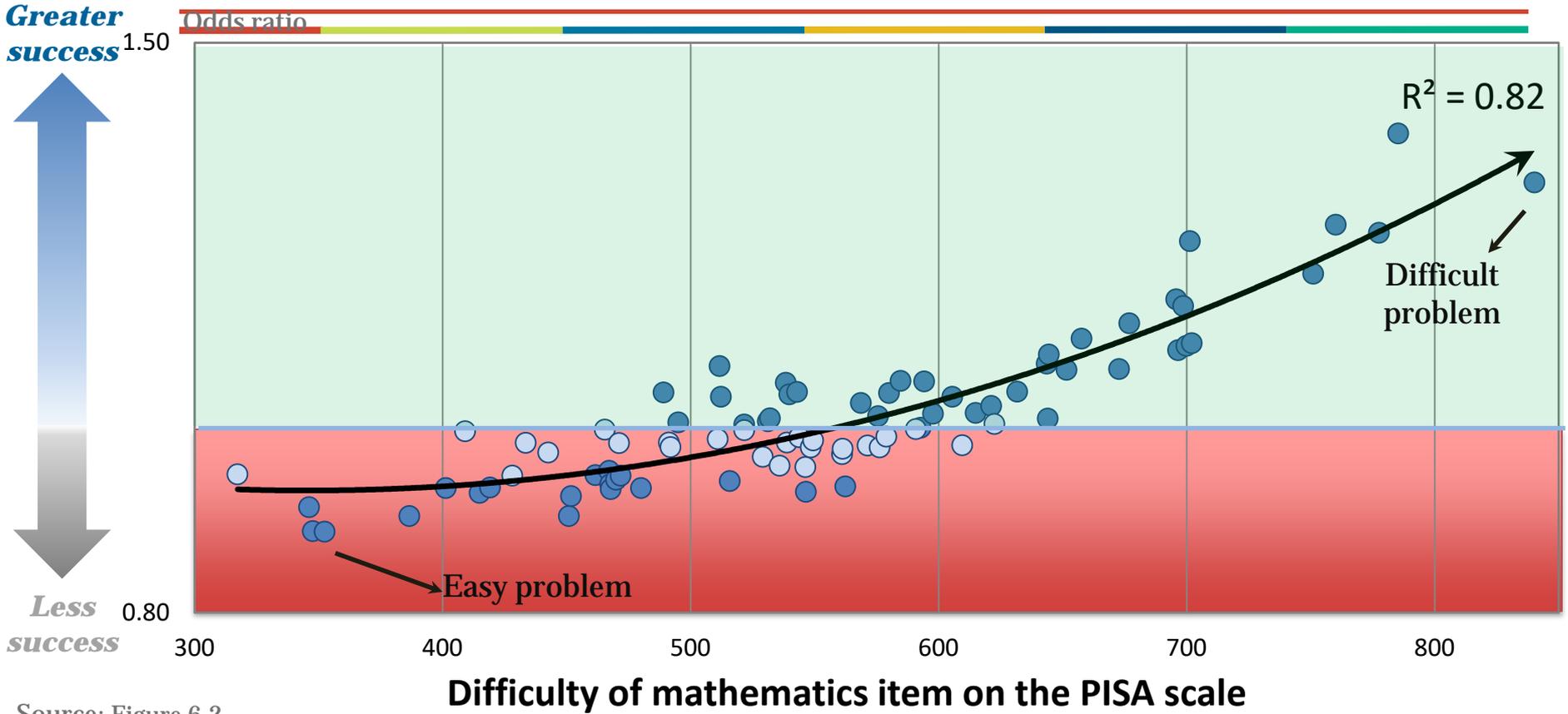


**Control strategies** are always helpful but less so as problems become more difficult (*OECD average*)



Source: Figure 5.2

**Elaboration strategies** are more useful as problems become more difficult (*OECD average*)



Source: Figure 6.2

# Building a high quality teaching force

Improve the societal view of teaching as a profession



Recruit top candidates into the profession



Developing Teaching as a profession

Retain and recognise effective teachers – path for growth

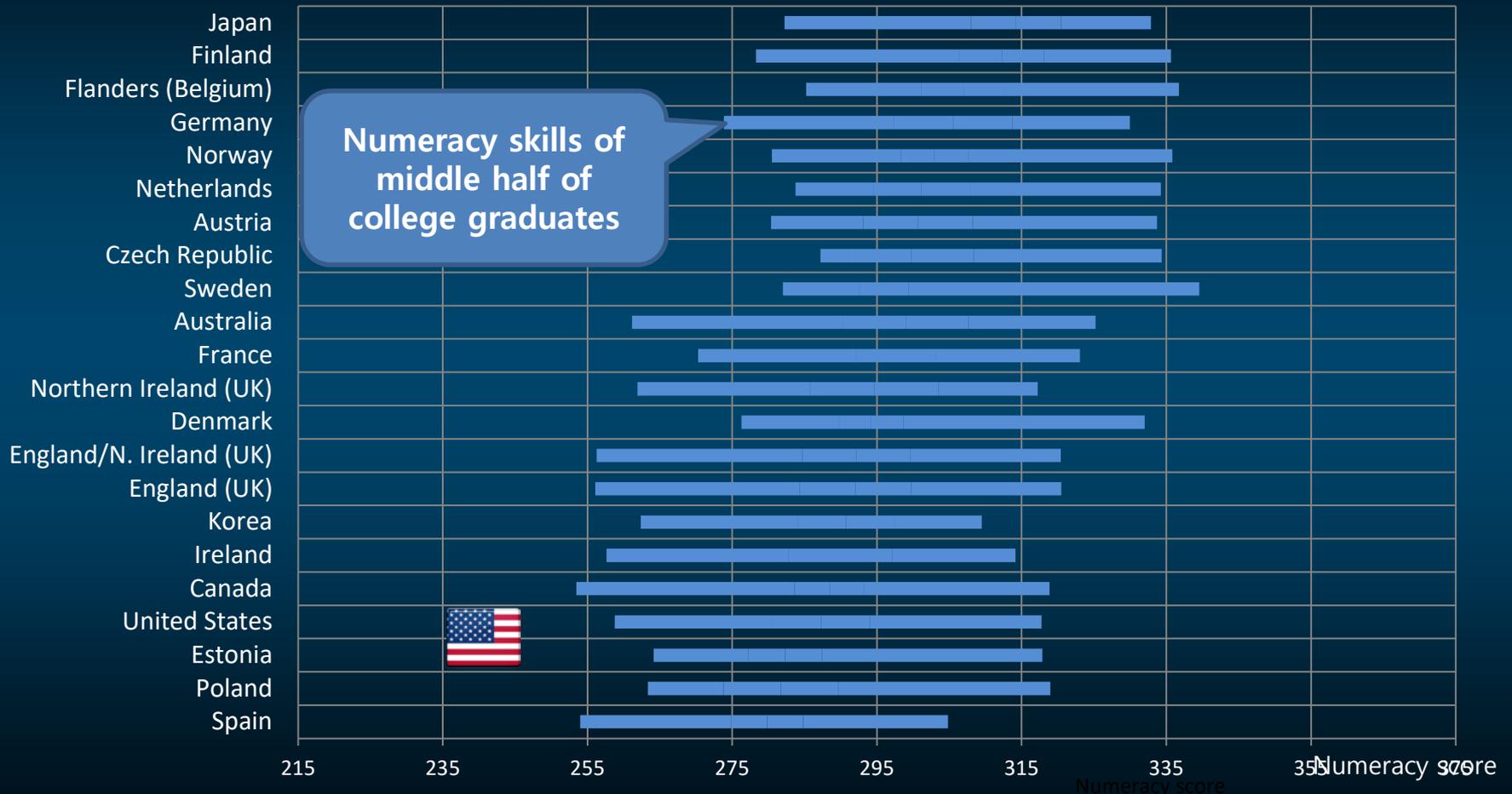


Support teachers in continued development of practice



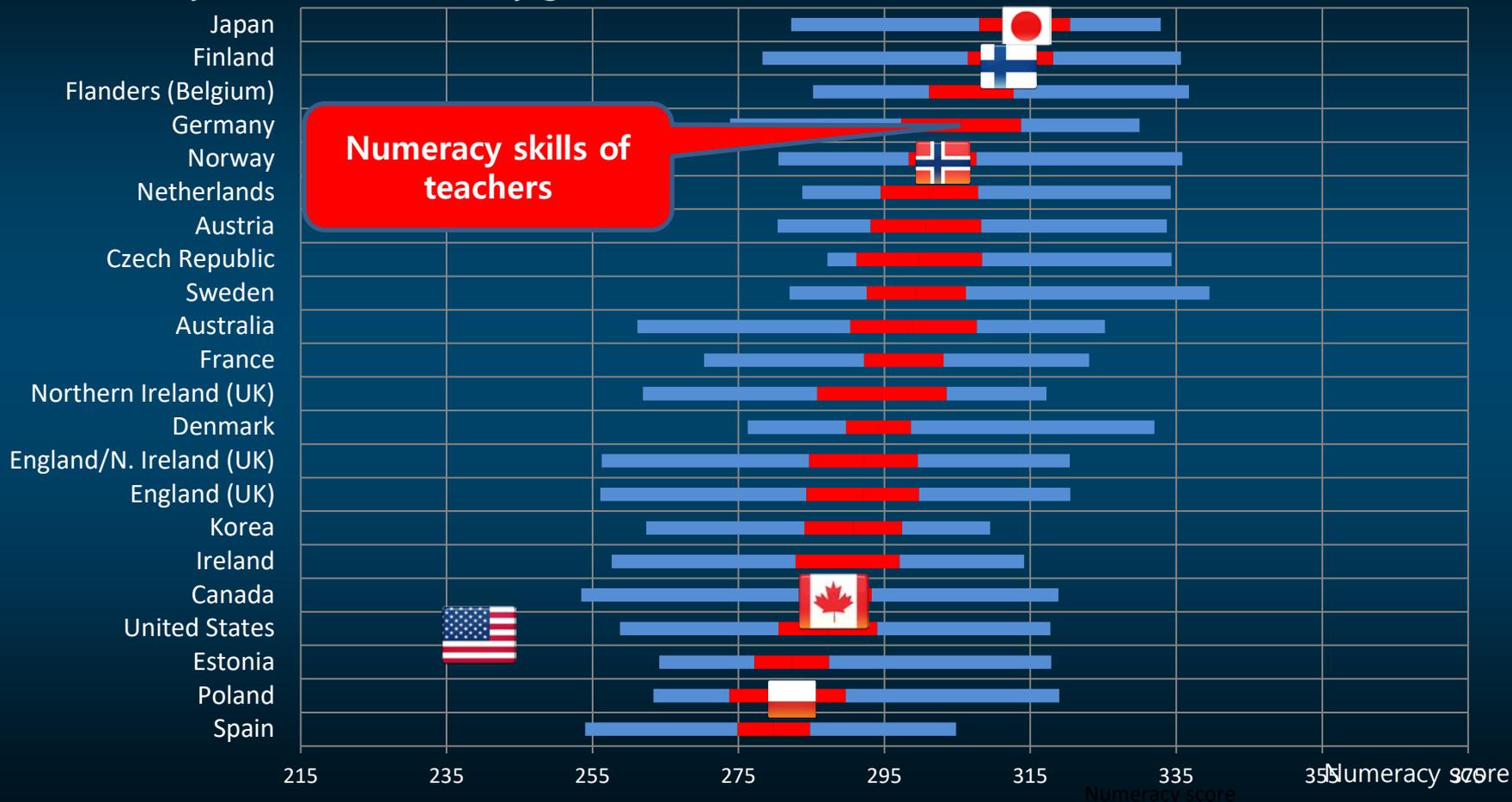
# Teachers' skills

Numeracy test scores of tertiary graduates and teachers

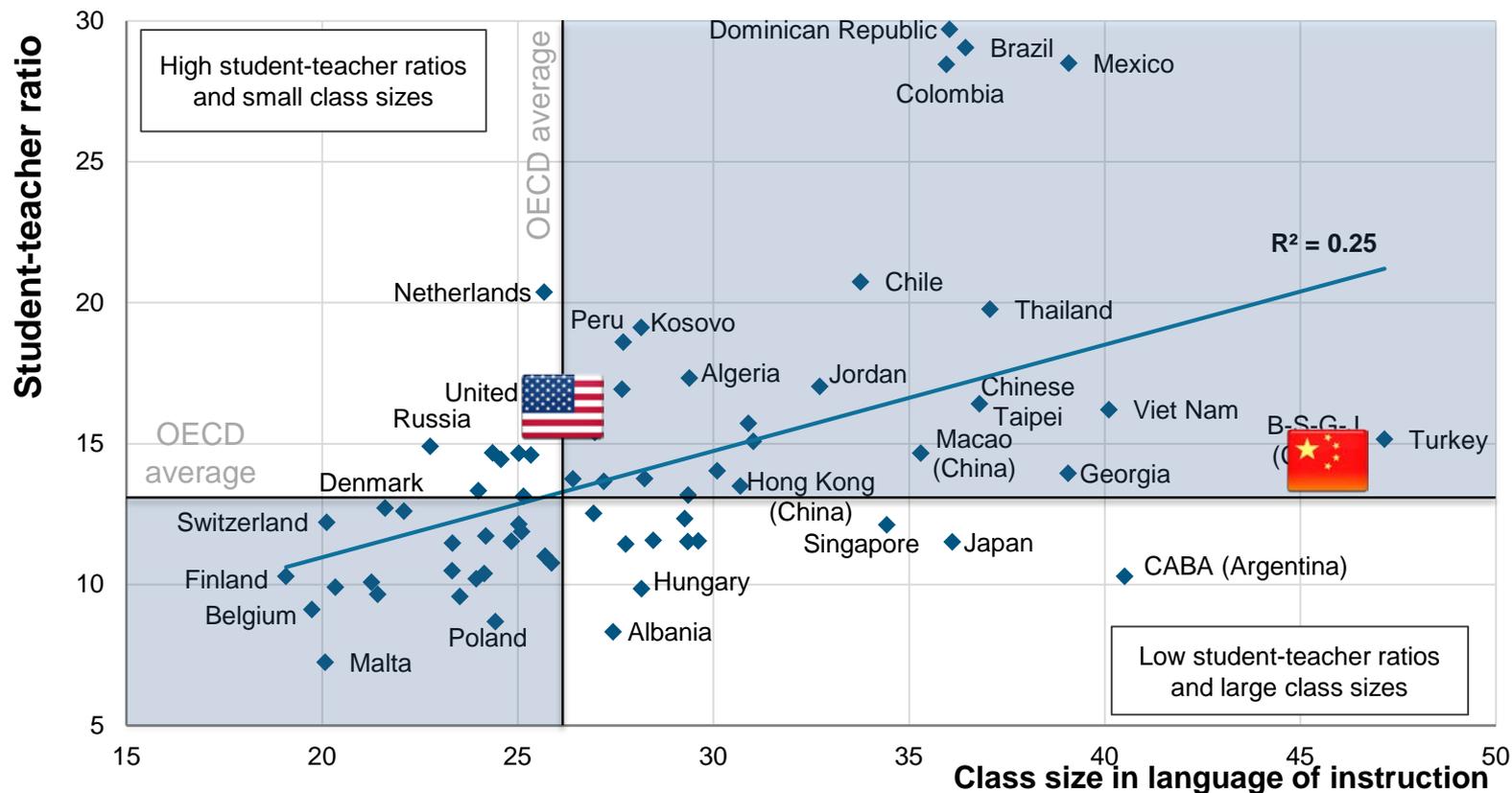


# Teachers' skills

Numeracy test scores of tertiary graduates and teachers



# Student-teacher ratios and class size



## Policy levers to teacher professionalism

**Autonomy:** Teachers' decision-making power over their work (teaching content, course offerings, discipline practices)

**Teacher professionalism**

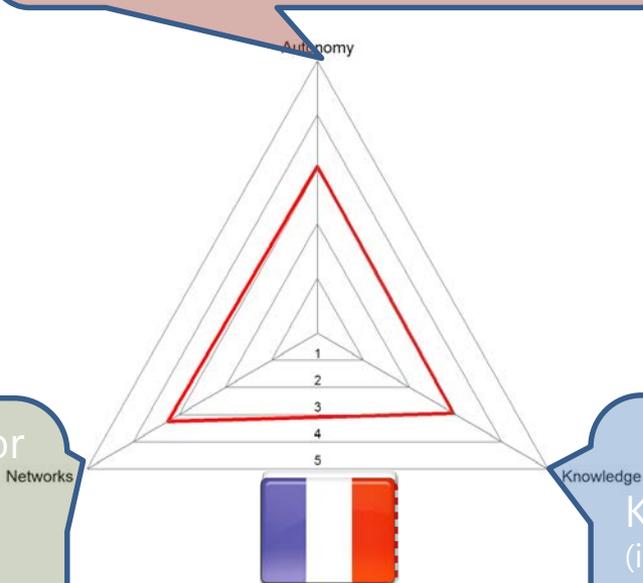
**Peer networks:** Opportunities for exchange and support needed to maintain high standards of teaching (participation in induction, mentoring, networks, feedback from direct observations)

**Knowledge base for teaching** (initial education and incentives for professional development)

# Teacher professionalism

Autonomy: Teachers' decision-making power over their work (teaching content, course offerings, discipline practices)

Autonomy



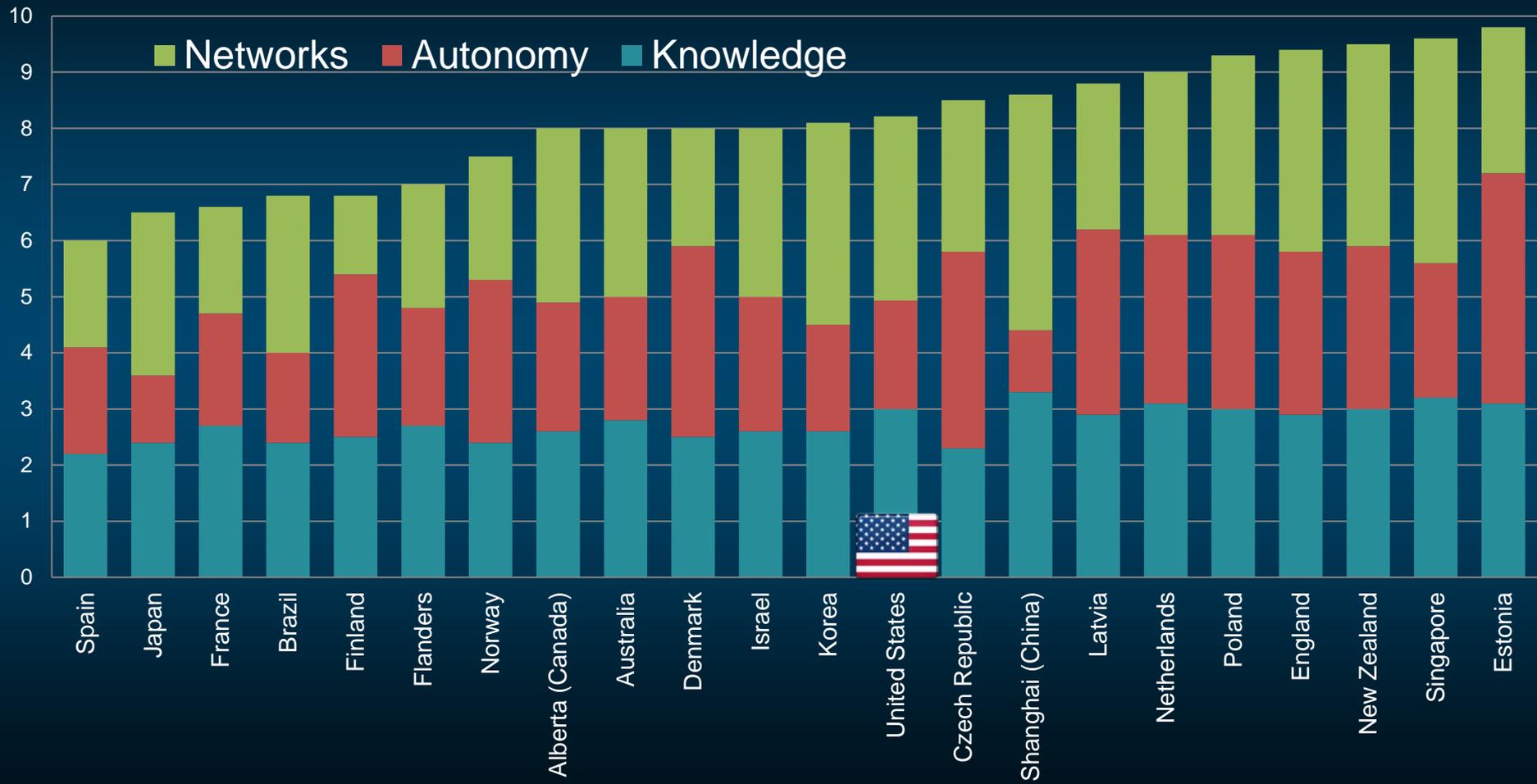
Peer networks: Opportunities for exchange and support needed to maintain high standards of teaching (participation in induction, mentoring, networks, feedback from direct observations)

Networks

Knowledge base for teaching (initial education and incentives for professional development)

Knowledge

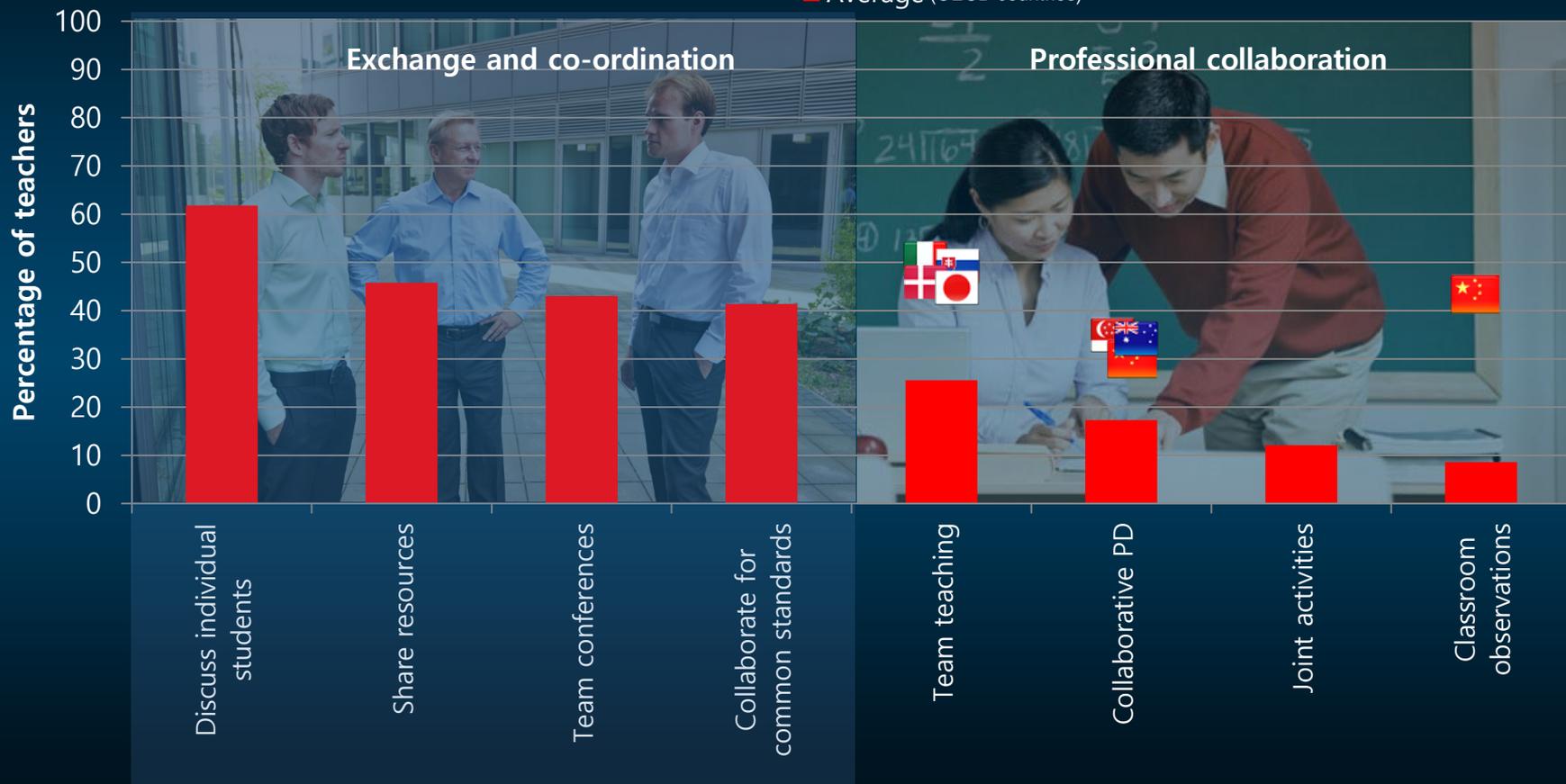
# TALIS Teacher professionalism index



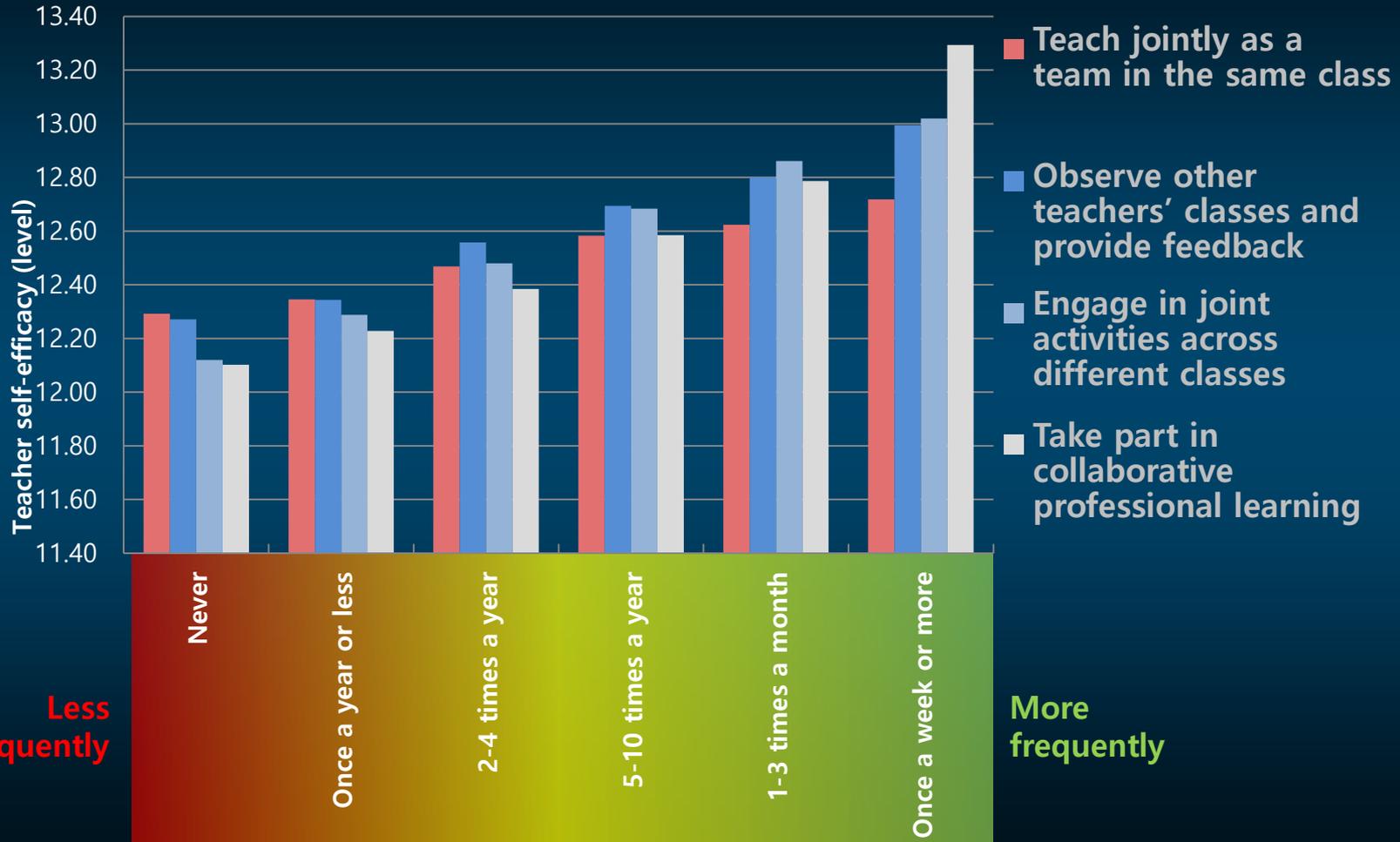
# Professional collaboration among teachers

Percentage of lower secondary teachers who report doing the following activities at least once per month

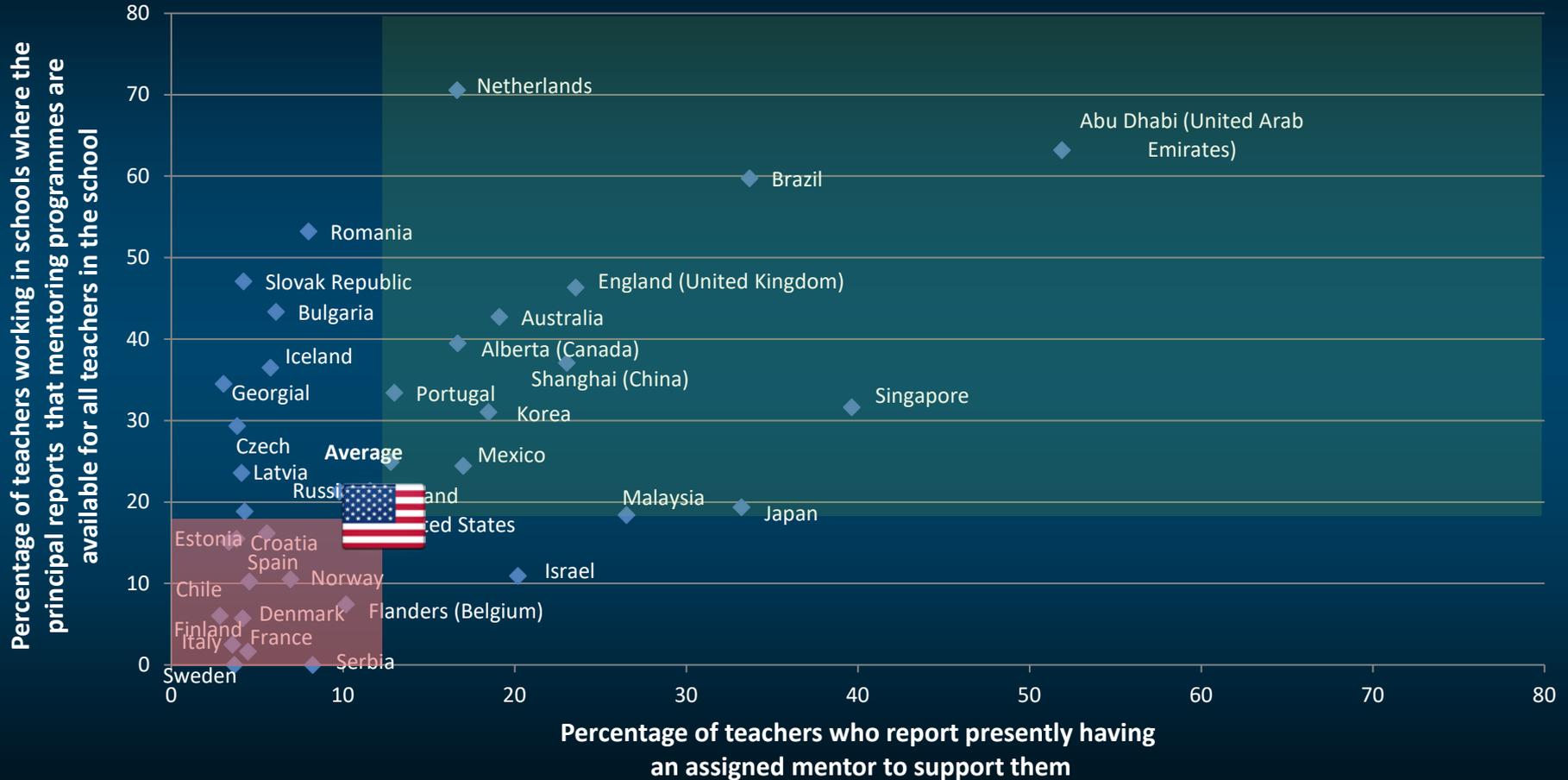
■ Average (OECD countries)



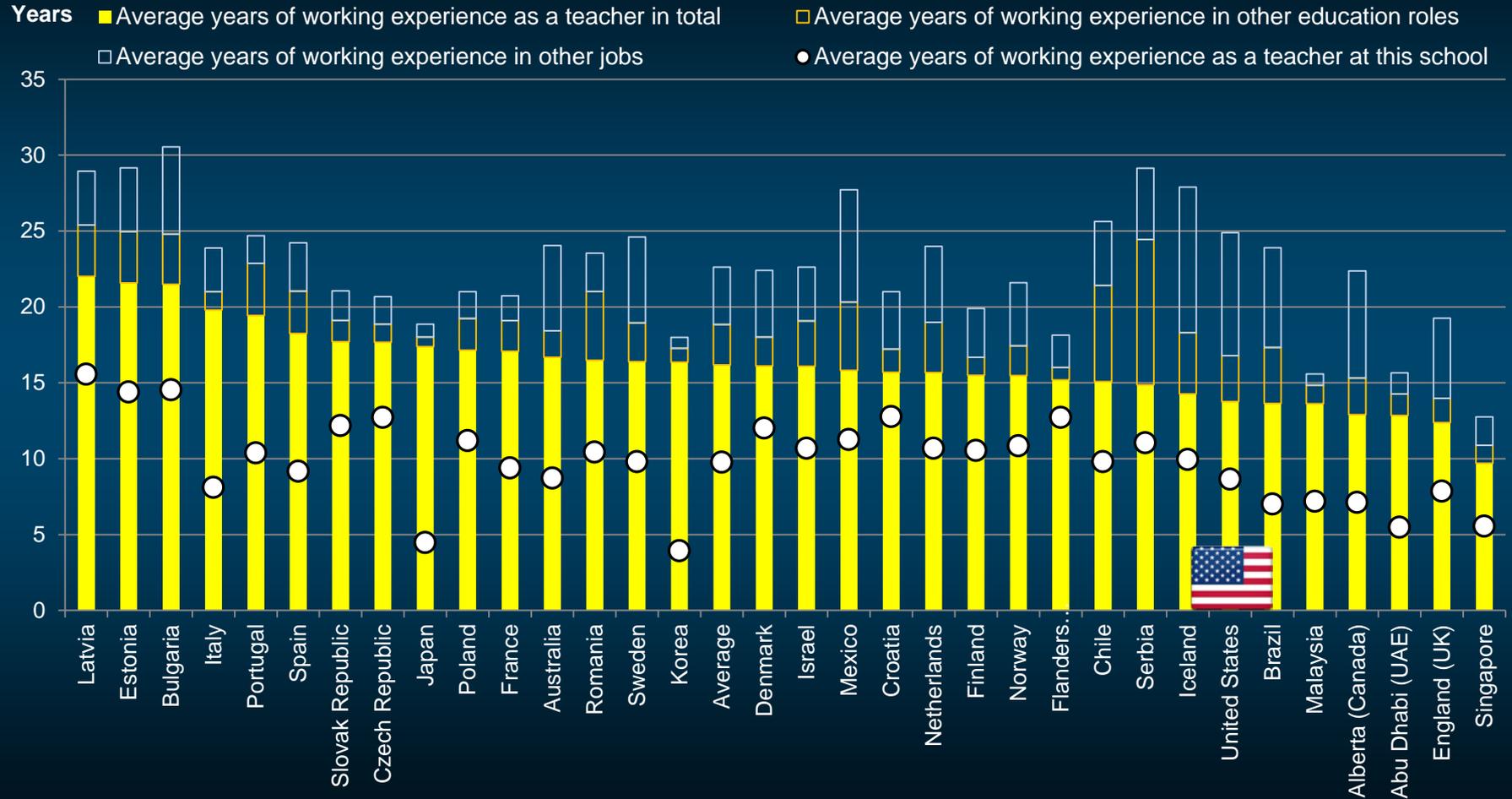
# Teachers Self-Efficacy and Professional Collaboration



# Not everywhere where principals say mentoring is available do teachers have mentors



# Work experience of teachers



## Technology can amplify innovative teaching

- Well beyond textbooks, in multiple formats, with little time and space constraints

Expand  
access to  
content

- As tools for inquiry-based pedagogies with learners as active participants

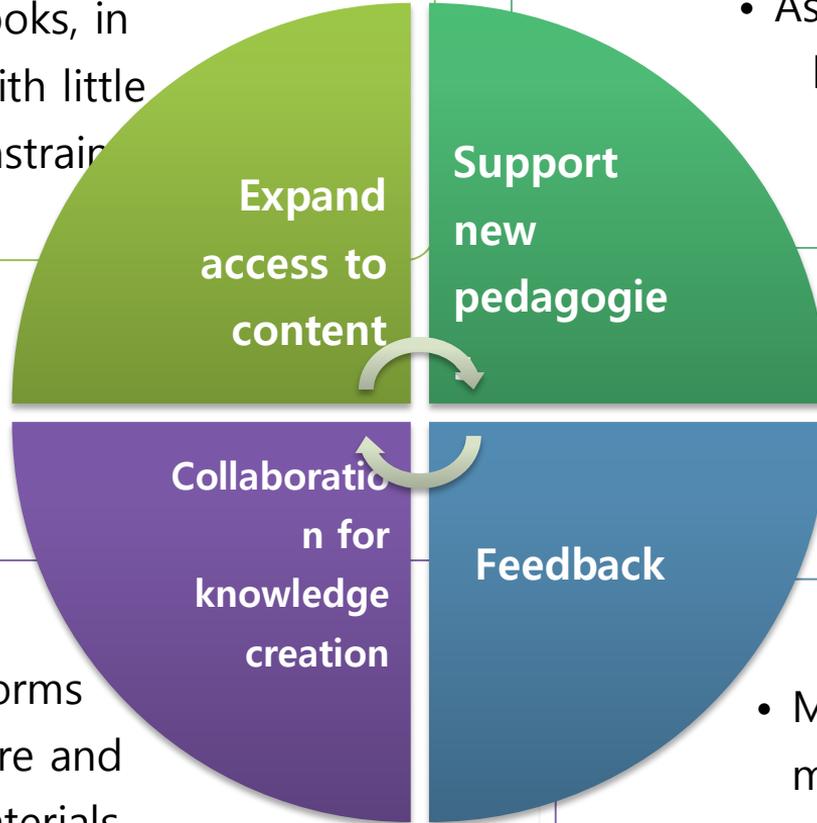
Support  
new  
pedagogie

- Collaborative platforms for teachers to share and enrich teaching materials

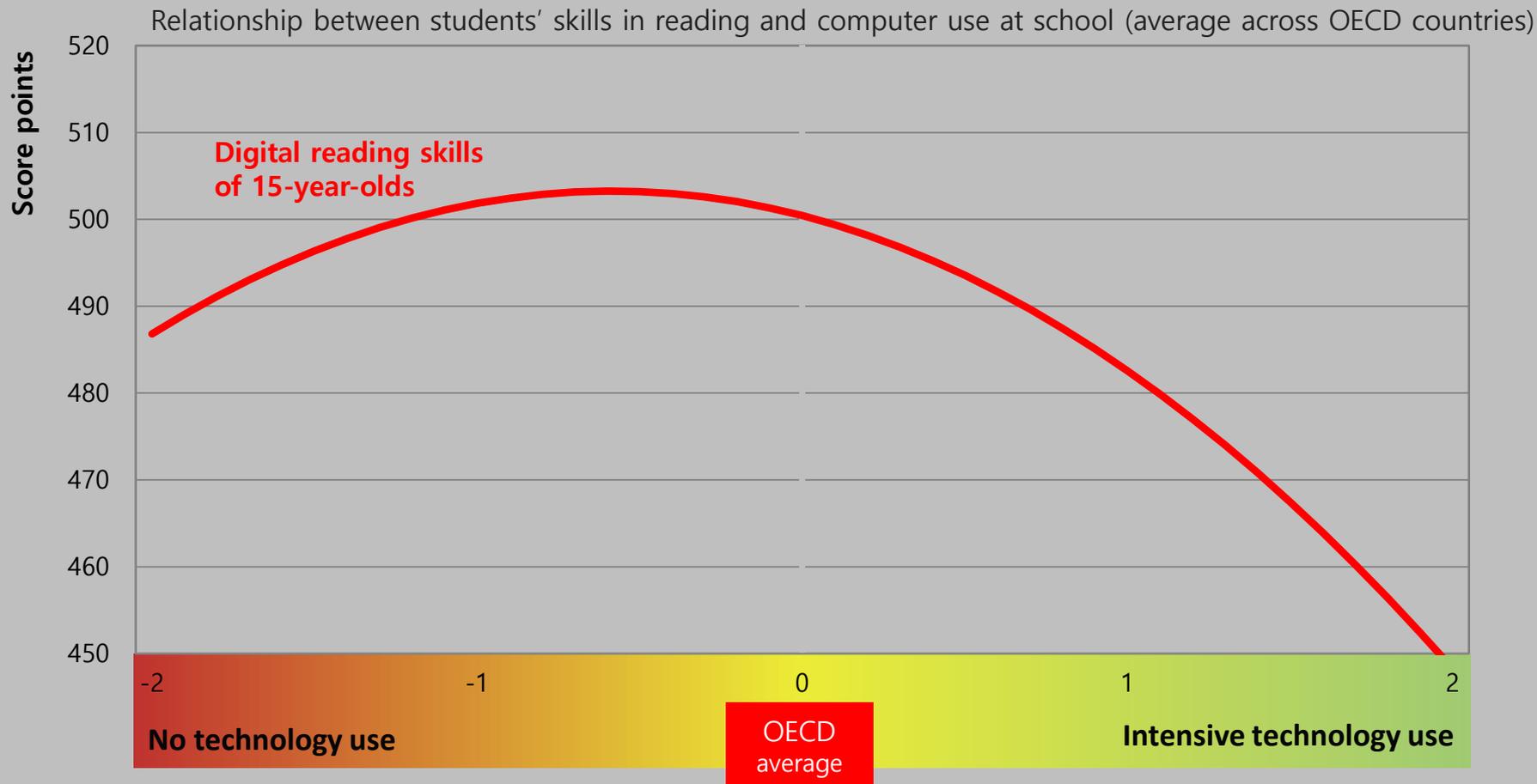
Collaboration  
for  
knowledge  
creation

Feedback

- Make it faster and more granular



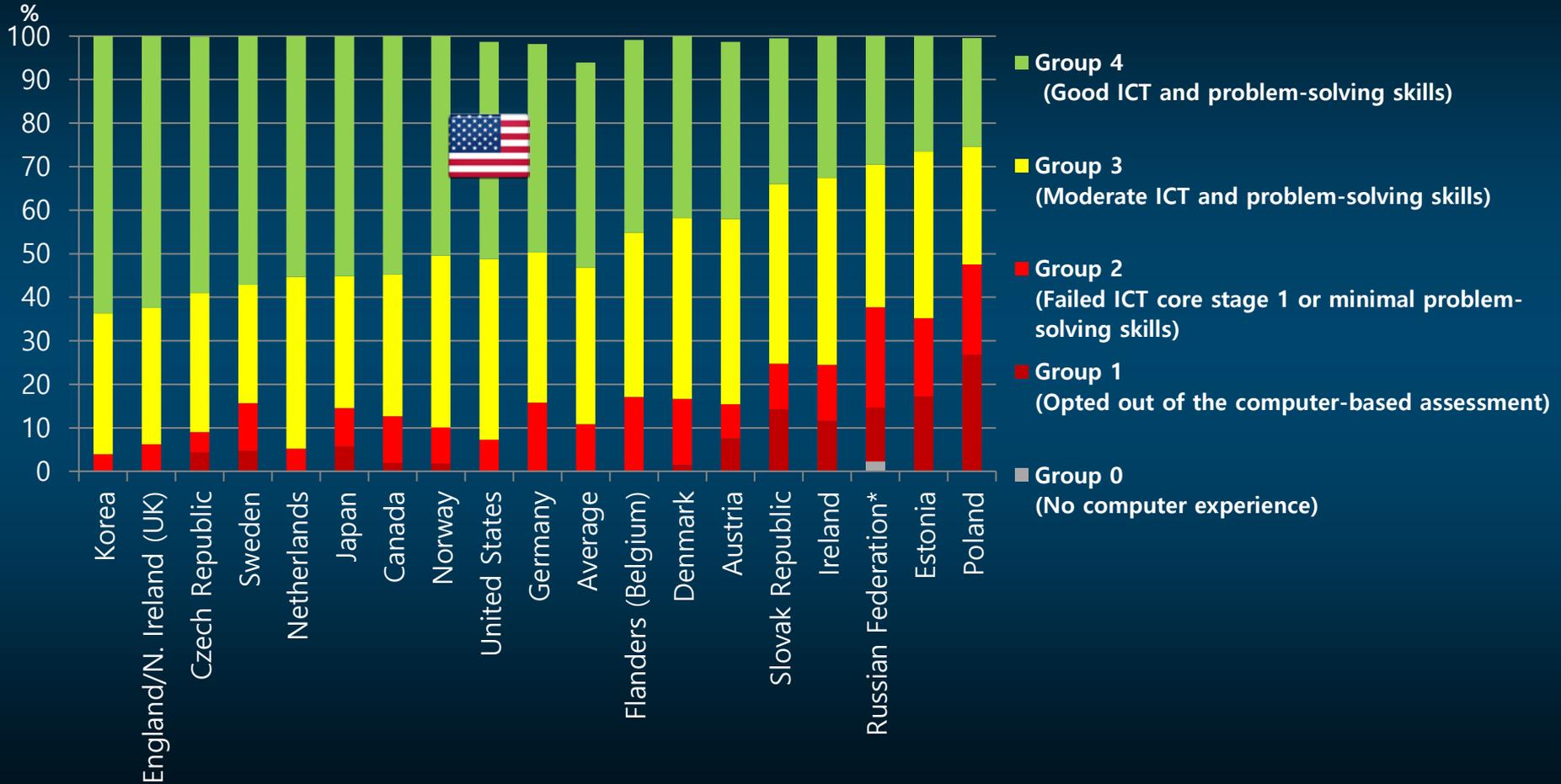
# Technology in schools and digital skills still don't square

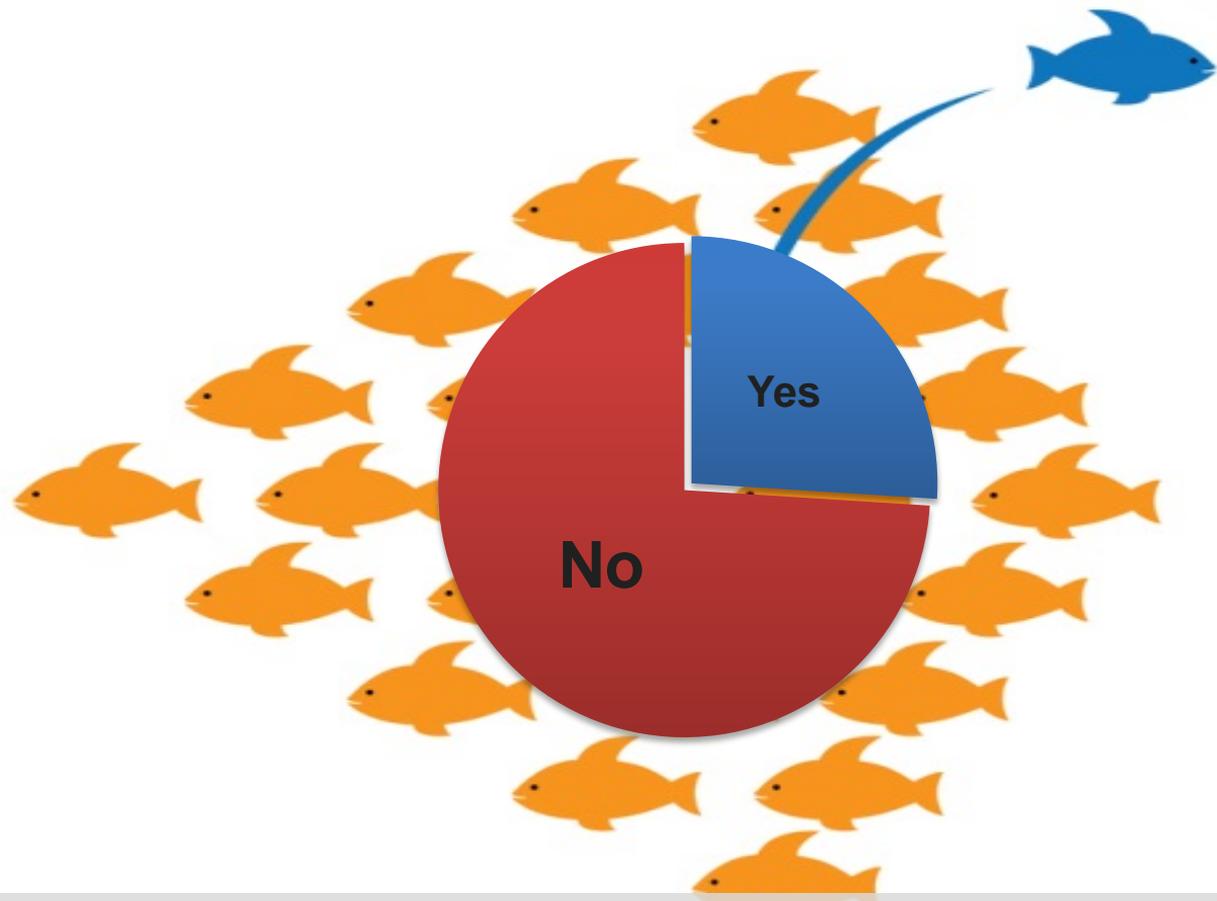


Source: Figure 6.5

# Teachers' skills and readiness to use information and communication technologies (ICT) for problem solving (2012)

Chart D5.4





**If I am more innovative in my teaching  
I will be rewarded (country average)**



# System transformations

## The old bureaucratic system

## The modern enabling system

**Some** students learn at high levels (sorting) Student inclusion **All** students need to learn at high levels

Routine cognitive skills Curriculum, instruction and assessment **Complex** ways of thinking, complex ways of doing, collective capacity

Standardisation and compliance Teacher quality **High-level** professional knowledge workers

**'Tayloristic',** hierarchical Work organisation **Flat,** collegial

Primarily to authorities Accountability **Primarily** to peers and stakeholders

# Thank you

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Email: [Andreas.Schleicher@OECD.org](mailto:Andreas.Schleicher@OECD.org)

Twitter: [SchleicherOECD](https://twitter.com/SchleicherOECD)

Wechat: [AndreasSchleicher](#)