



Teaching & Learning

# ISTP 2019

The future of teaching and learning  
Andreas Schleicher





Teaching & Learning

Do you remember  
how many teachers  
you had through your  
education?

How many of them  
can you still name?

At age 30, people remember the  
names of an average of 15 teachers



Over the past 5 years most  
had not seen any of them

On average, teachers teach  
1200 students in their lifetime

At the age of their  
retirement, they accurately  
remembered the names of  
an average of almost 200  
of their students

# Trends in science performance (PISA)

570

550

530

510

490

470

450

Student performance

OECD average

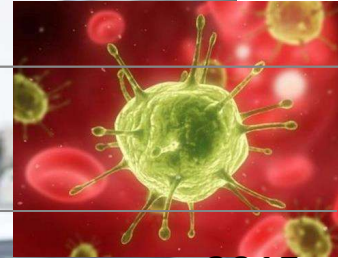
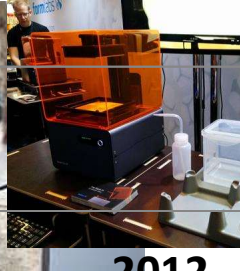
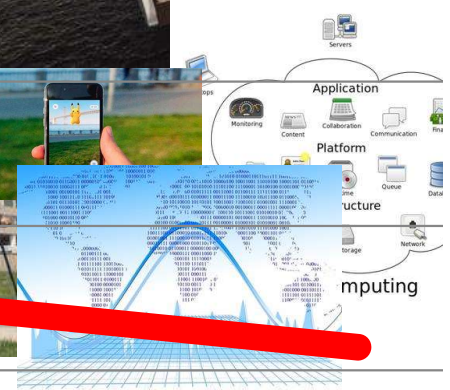
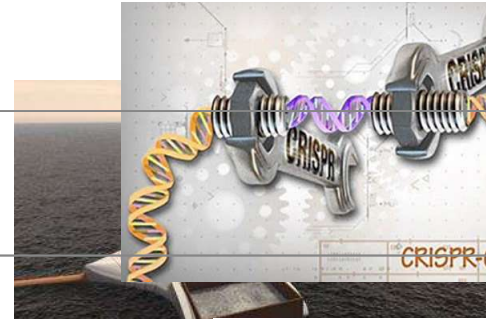


2006

2009

2012

2015



# Trends in science performance (PISA)

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**OECD average**



2006

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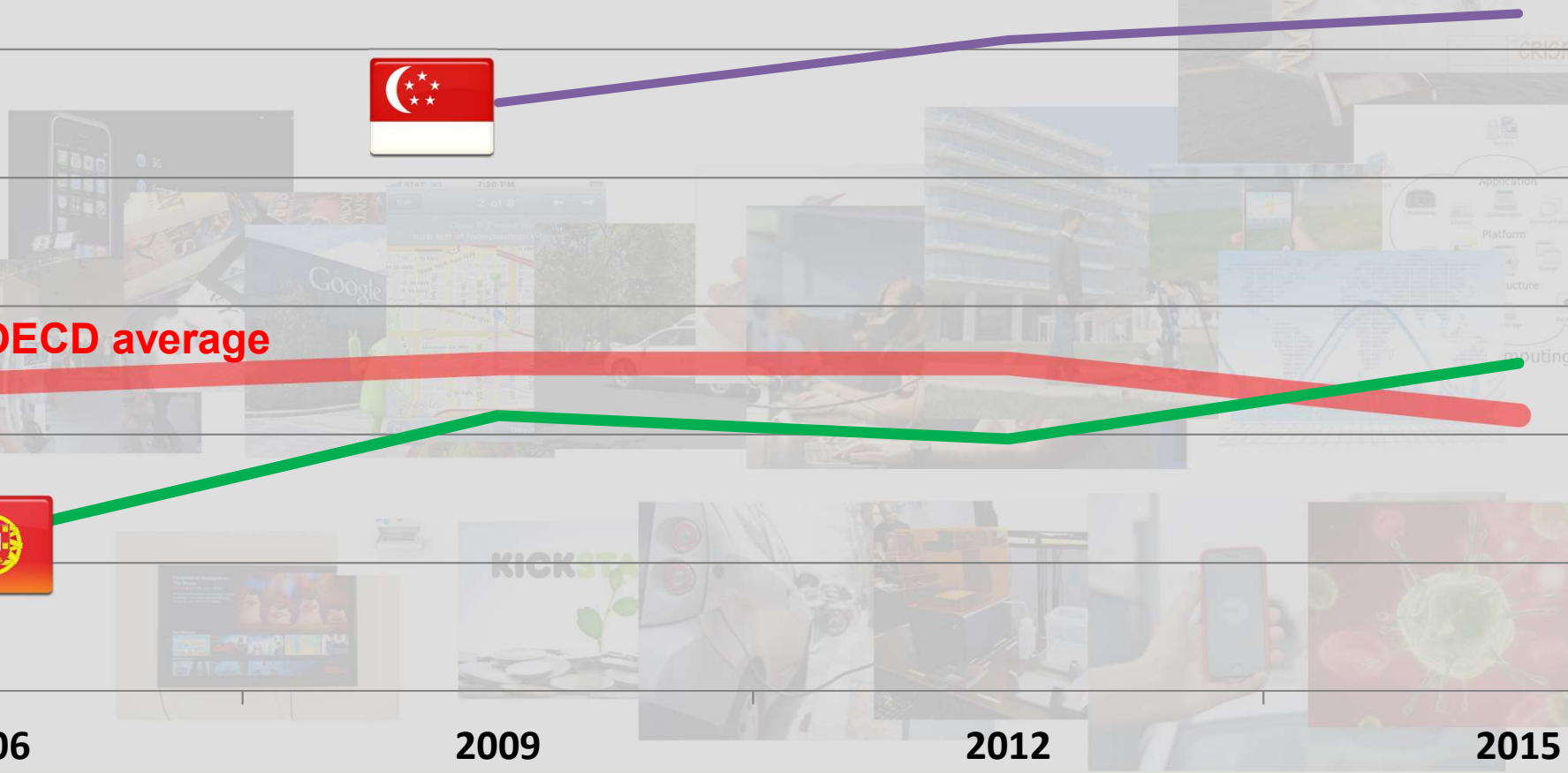


Figure II.6.2

# Money is necessary but not sufficient

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

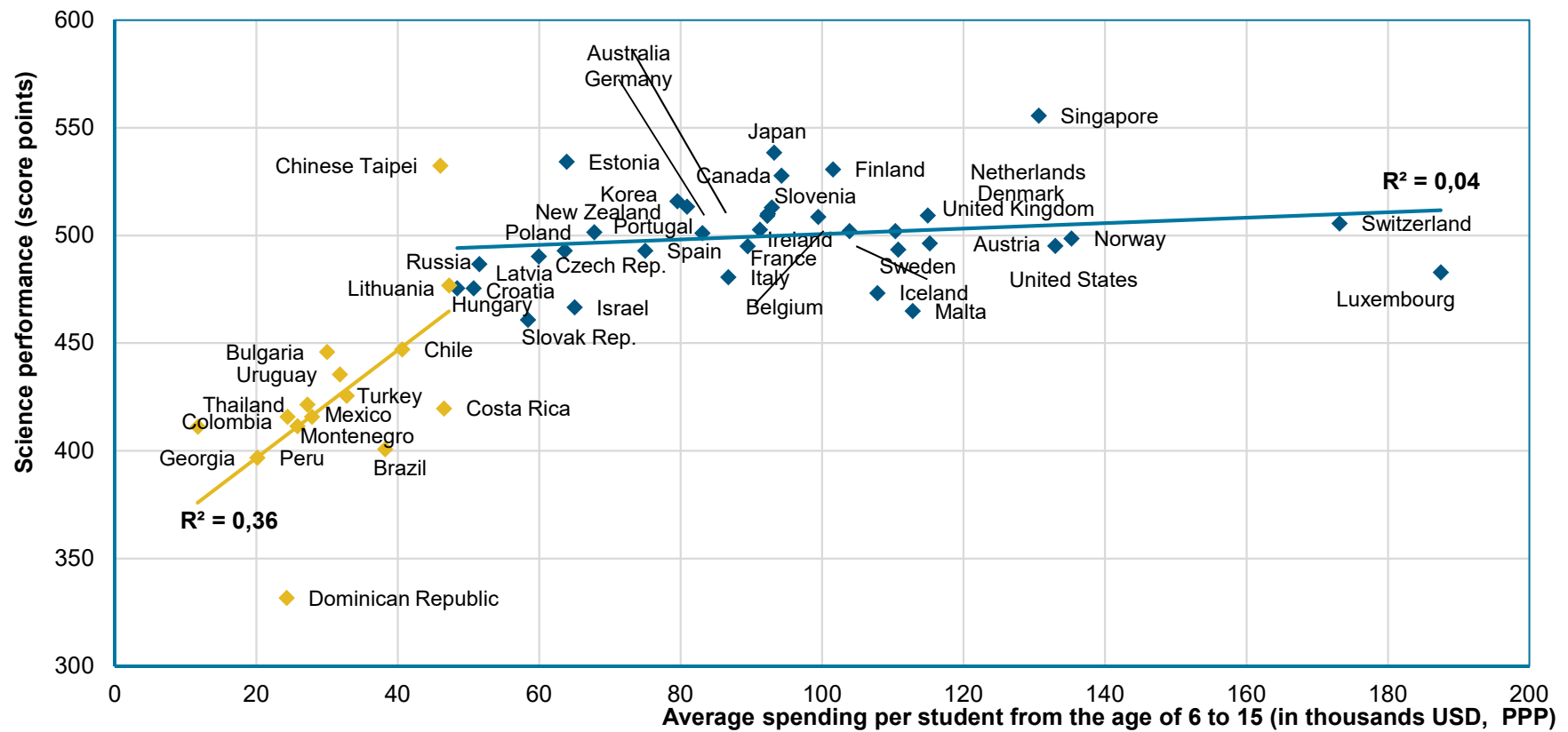
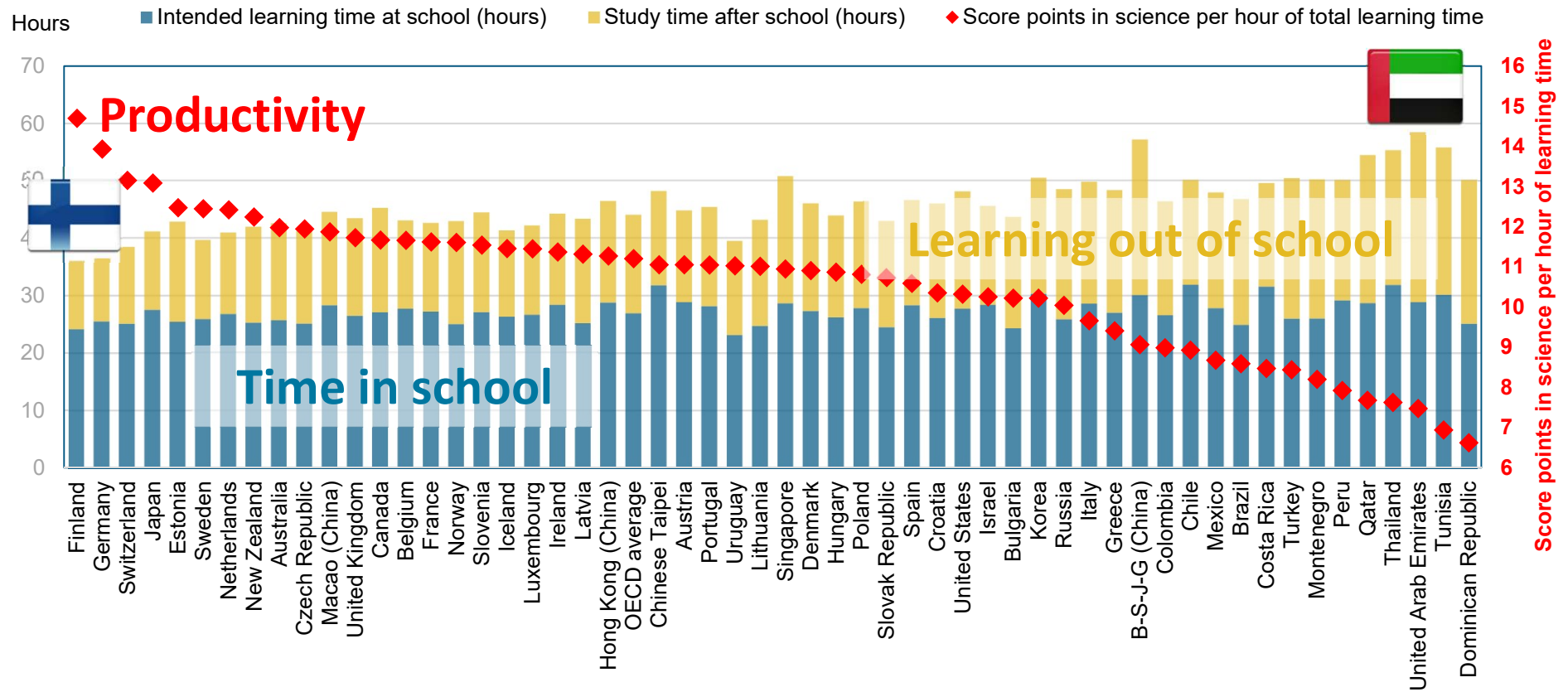


Figure II.6.23

# Learning time and science performance (PISA)



# Changing education can be like moving graveyards

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- The status quo has many protectors
  - Everyone supports reform – except for their own children
  - Even those who promote reforms often change their mind when they understand what change entails for them
- The frogs rarely clear the swamp
  - The loss of privilege is pervasive because of the extent of vested interests
- Asymmetry of costs and benefits of educational reform
  - Costs are certain and immediate, benefits are uncertain and long-term
- Lack of supportive ecosystems
  - Lack of an ‘education industry’ that pushes innovation and absorbs risks
  - A research sector that is often disengaged from the real needs of real classrooms
- You can lose an election but you don’t win one over education
  - Complexity and length of reform trajectory that extend electoral cycles
  - A substantial gap between the time when the cost of reform is incurred, and the time when benefits materialise



# LEADING TOGETHER

Knowledge is only as valuable as our capacity to act on it,  
and the road of educational reform is littered with good ideas that were poorly implemented



# When fast gets really fast, being slow to adapt makes education really slow

**The past**

**The future**

Some students learn at high levels

Student inclusion

All students need to learn at high levels

Routine cognitive skills

Curriculum, instruction and assessment

Complex ways of thinking and working

Standardisation and compliance

Teacher education

High-level professional knowledge workers

'Tayloristic', industrial

Work organisation

Flat, collegial, entrepreneurial

Primarily to authorities

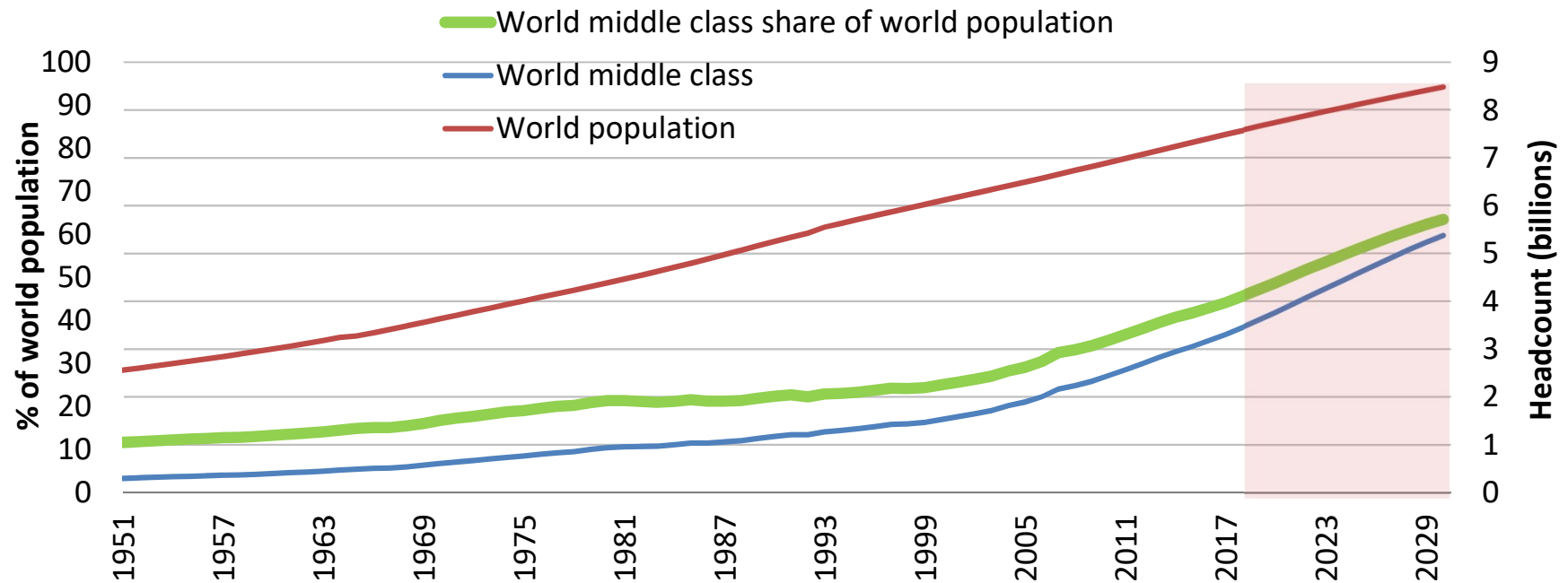
Accountability

Primarily to peers and stakeholders

# The rise of the global middle class

Within the next decade the majority of the world population will consist of the middle class

Estimates of the size of the global middle class, percentage of the world population (left axis) and headcount (right axis)



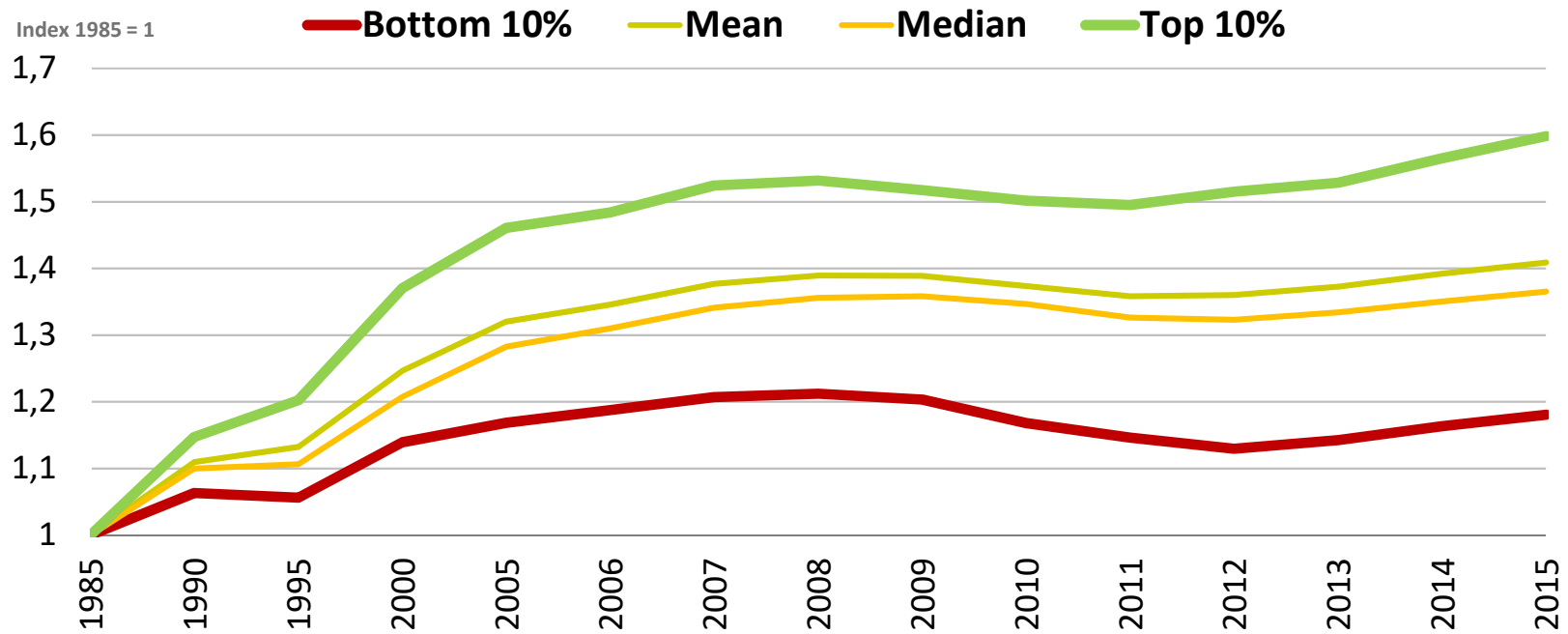
Source: Kharas, H. (2017), The unprecedented expansion of the global middle class, an update, [https://www.brookings.edu/wp-content/uploads/2017/02/global\\_20170228\\_global-middle-class.pdf](https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf). Kharas, H. (2010), The emerging middle class in developing countries, <https://www.oecd.org/dev/44457738.pdf>.

Figure 1.2

# Growing unequal

Income gaps continues to grow

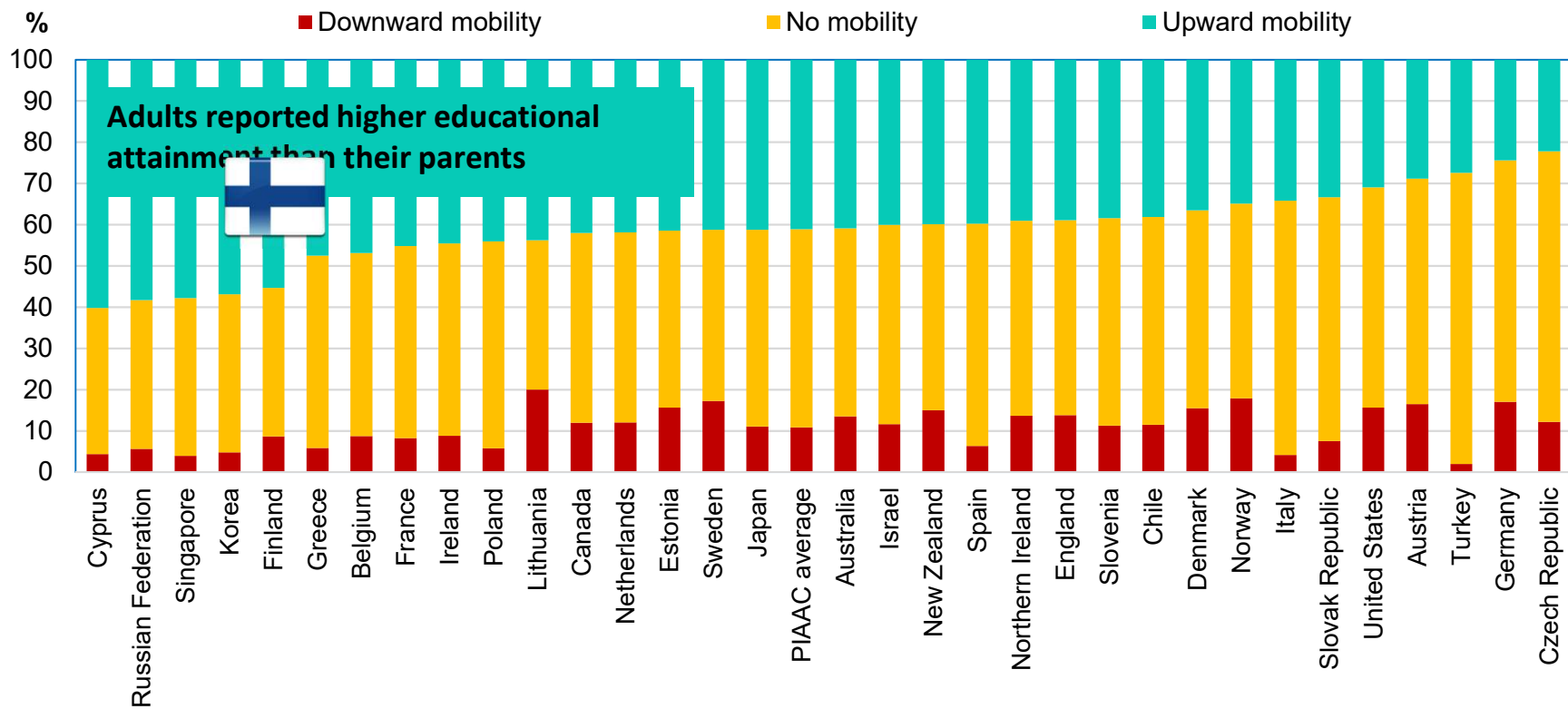
Trends in real household incomes by percentile, OECD average, 1985-2015



Source: OECD (2018), *A Broken Social Elevator? How to Promote Social Mobility*, <https://doi.org/10.1787/9789264301085-en>.

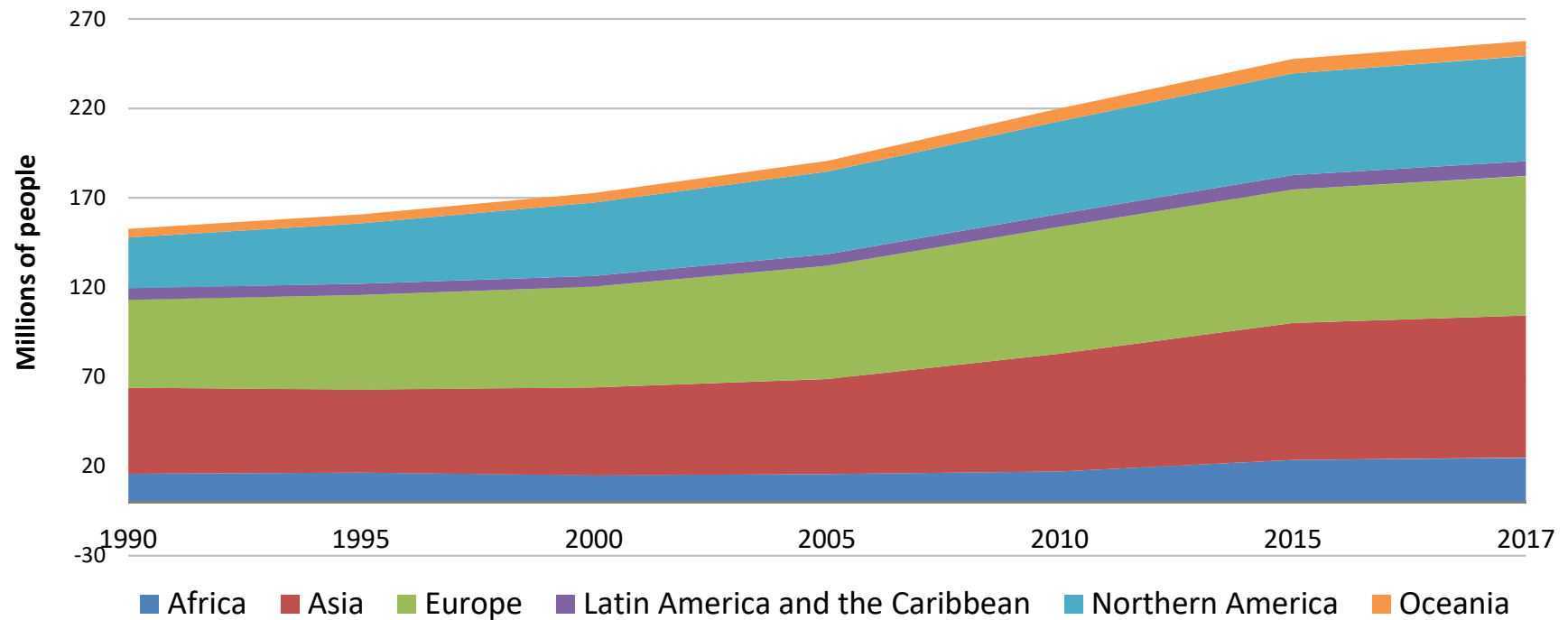
Figure 2.1

# Upward educational mobility varies across countries



# More people on the move

Estimates of international migrant stock by region of destination, 1990-2017



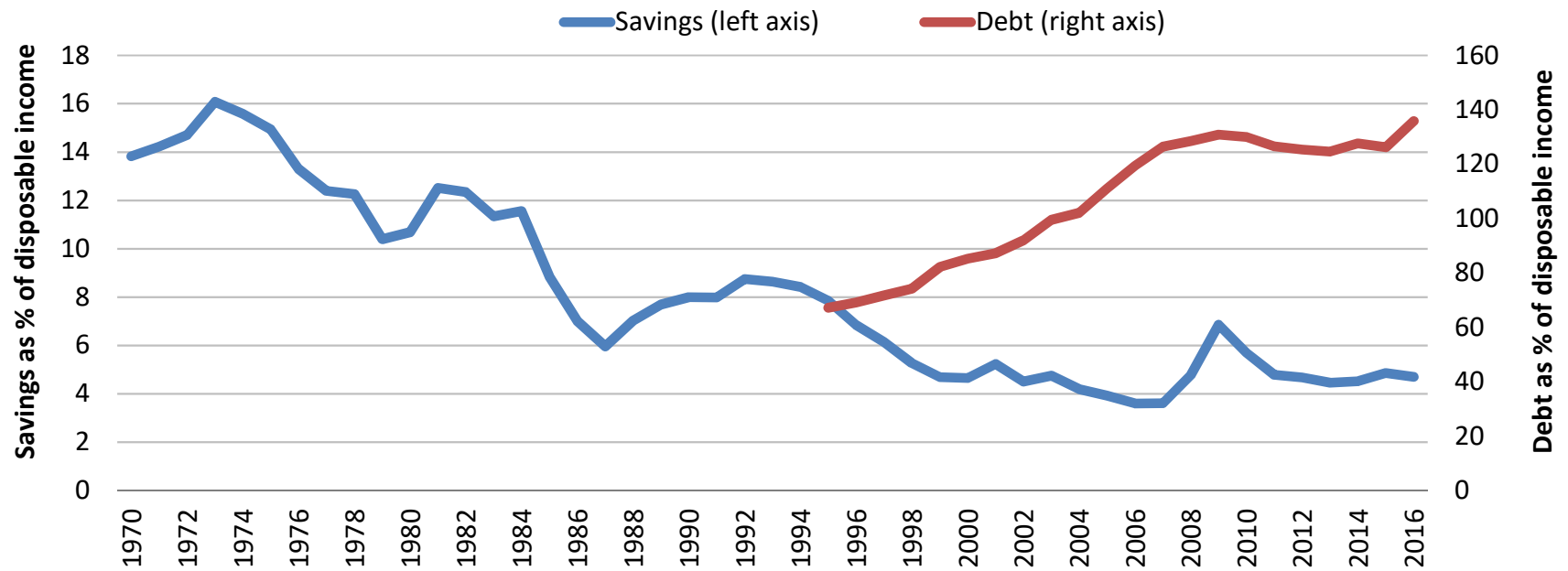
Source: United Nations (2017), "International migrant stock: The 2017 revision" (database), [www.un.org/en/development/desa/population/migration/data/](http://www.un.org/en/development/desa/population/migration/data/).

Figure 1.5

# Rising volatility

## Household savings and debt

Household savings (% of disposable income, left axis) and household debt (% of disposable income, right axis), OECD average, 1970-2016



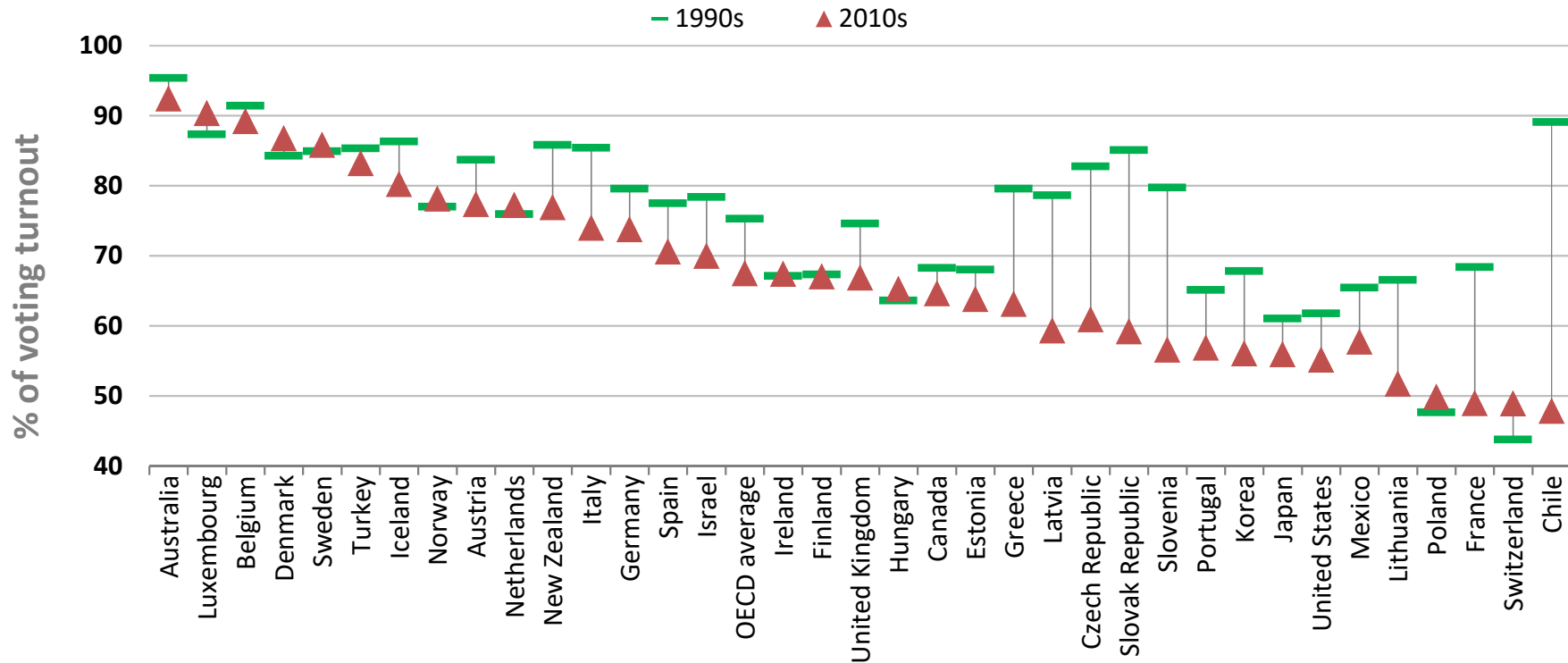
Source: OECD (2018), *OECD National Accounts Statistics* (database), <https://stats.oecd.org/>.

Figure 3.9

# Public matters

## Declining voter turnout in OECD countries

Change in average voting rates per decade in OECD countries, 1990s and 2010s

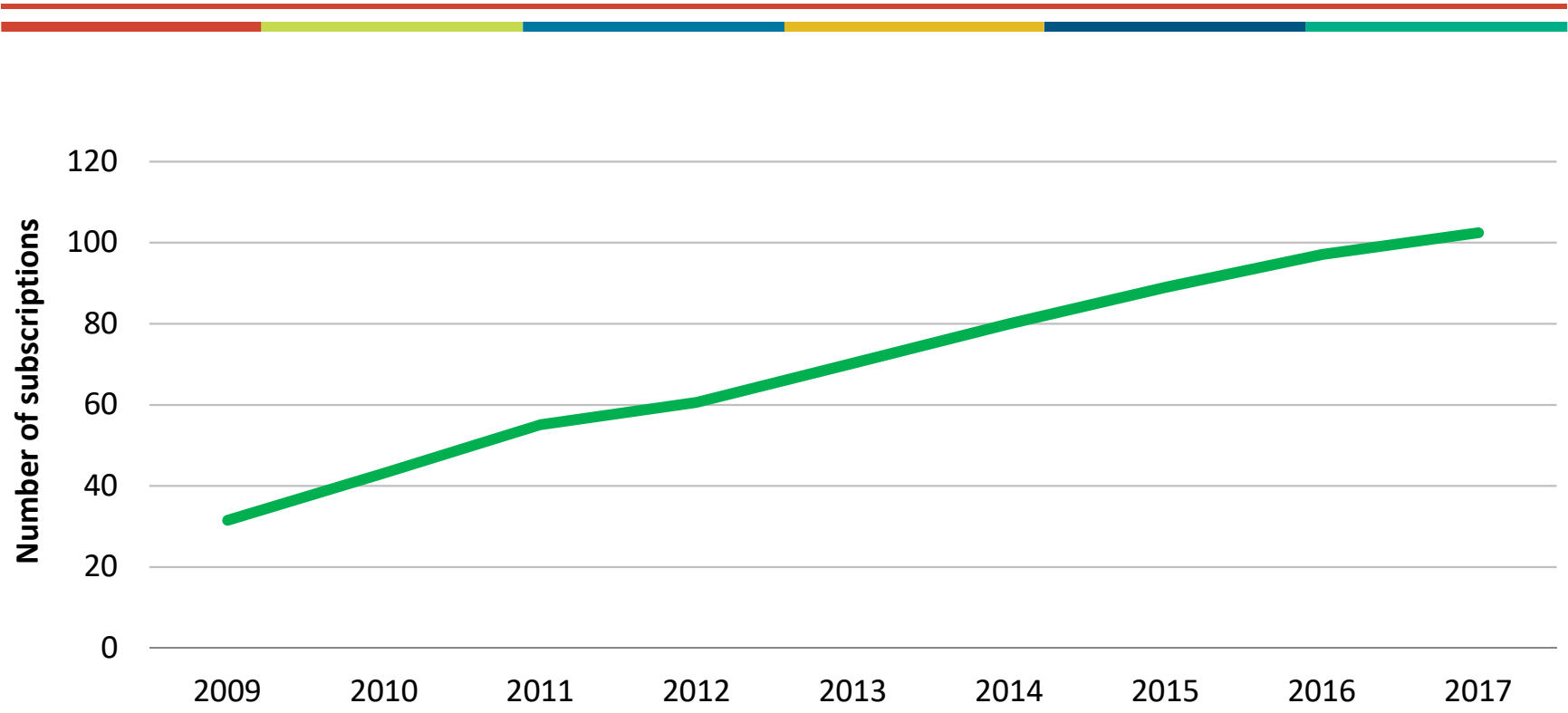


Source: International IDEA (2018), *International Voter Turnout Database*, [www.idea.int](http://www.idea.int).

Figure 2.3

# Access to Access

Number of mobile broadband subscriptions per 100 inhabitants, OECD average, 2009-2017



Source: OECD (2018), "Mobile broadband subscriptions" (indicator), <https://doi.org/10.1787/1277ddc6-en>.

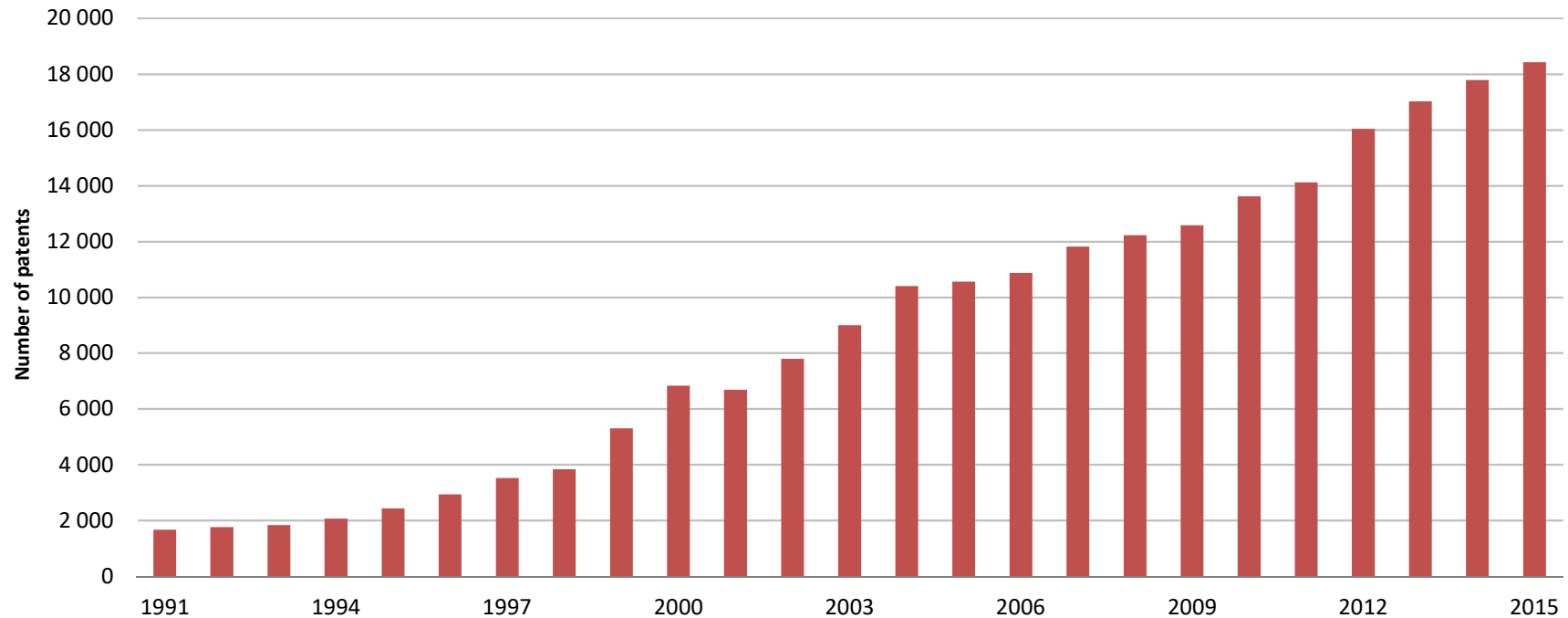
Figure 5.1



# The growth in AI technologies...

...pushes us to think harder about what makes us truly human

Number of patents in artificial intelligence technologies, 1991-2015



Source: OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, <http://dx.doi.org/10.1787/9789264268821-en>.

Figure 1.10

# Digitalisation



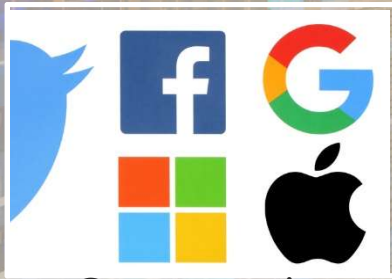
Democratizing



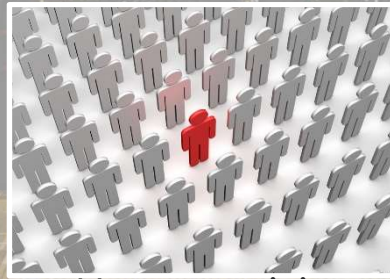
Particularizing



Empowering



Concentrating

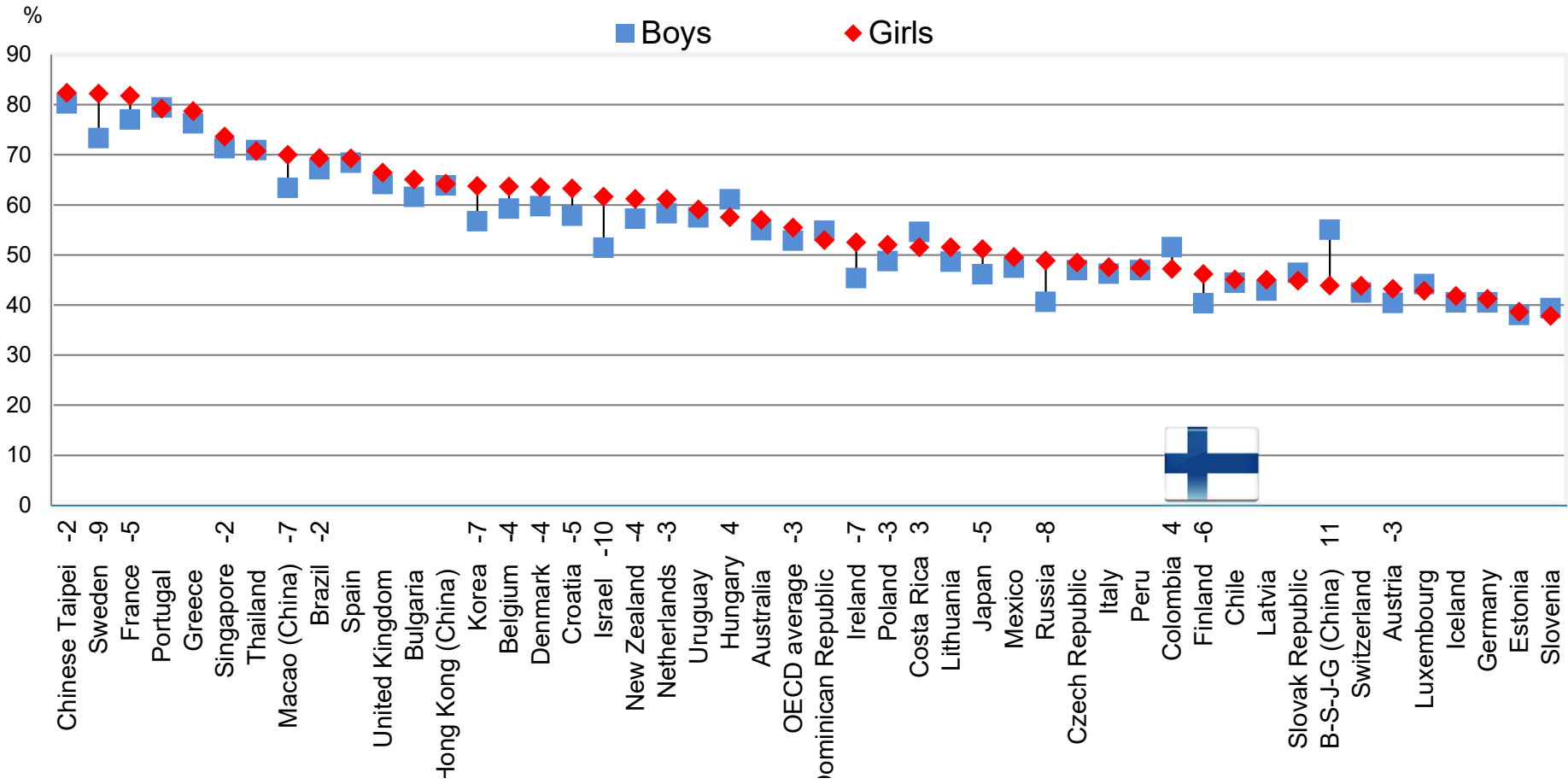


Homogenizing



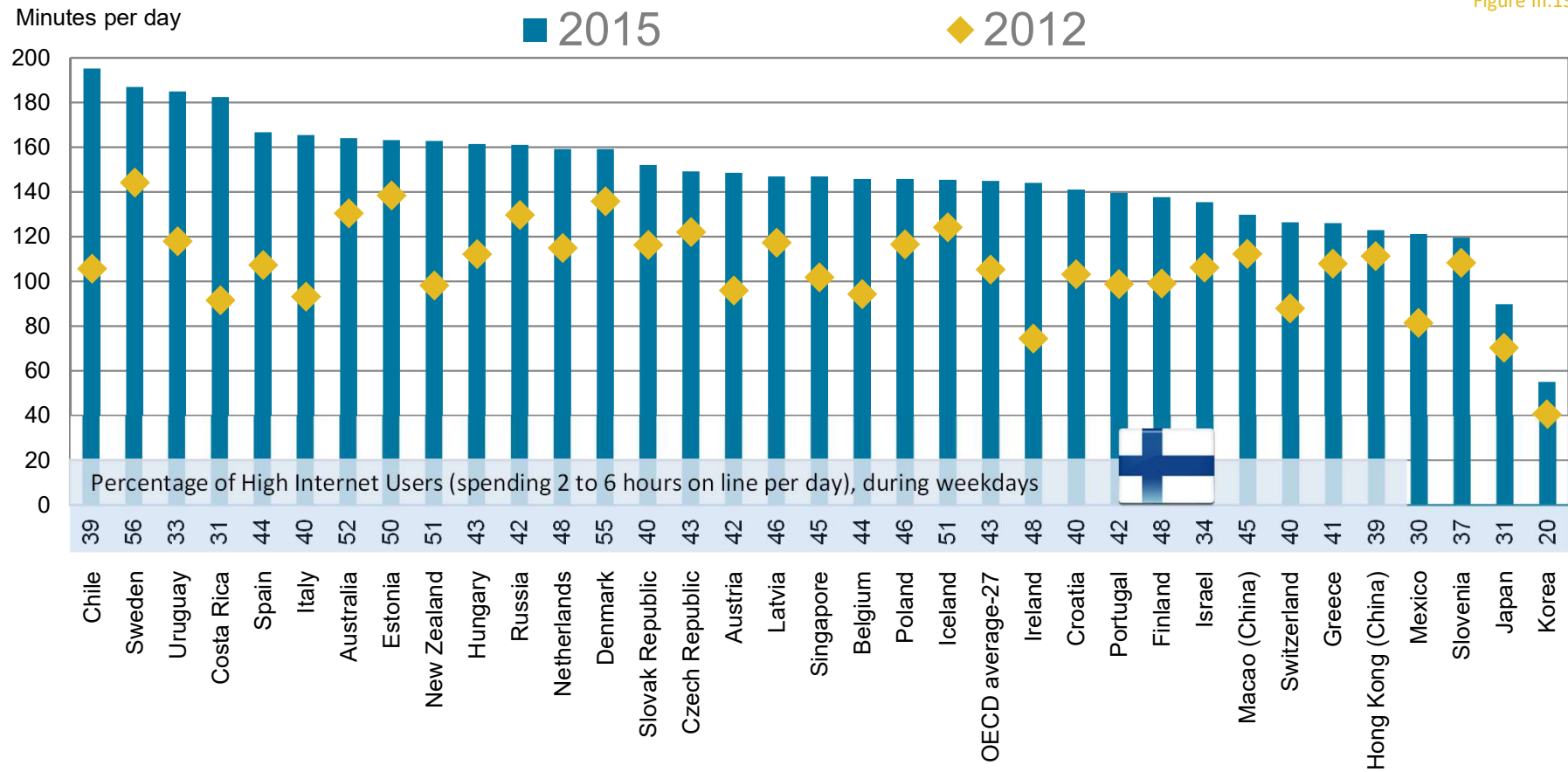
Disempowering

# 15-year-olds feeling bad if not connected to the Internet (PISA)



# Students are using more time online outside school on a typical school day (PISA)

Figure III.13.3



## The real obstacle to education reform is not conservative followers but conservative leaders

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- be transparent with teachers and school leaders about where reform is heading and what it means for them
- be aware of how organisational policies and practices can either facilitate or inhibit transformation
- tackle institutional structures that are built around the interests and habits of educators and administrators rather than learners
- recognise emerging trends and patterns and see how these might benefit or obstruct the goals of change
- use knowledge about what motivates people to convince others to support change
- use understanding of power and influence to build the alliances and coalitions needed to get things done
- help rules become practice, and good practice to become culture

## **The real obstacle to education reform is not conservative followers but conservative leaders**

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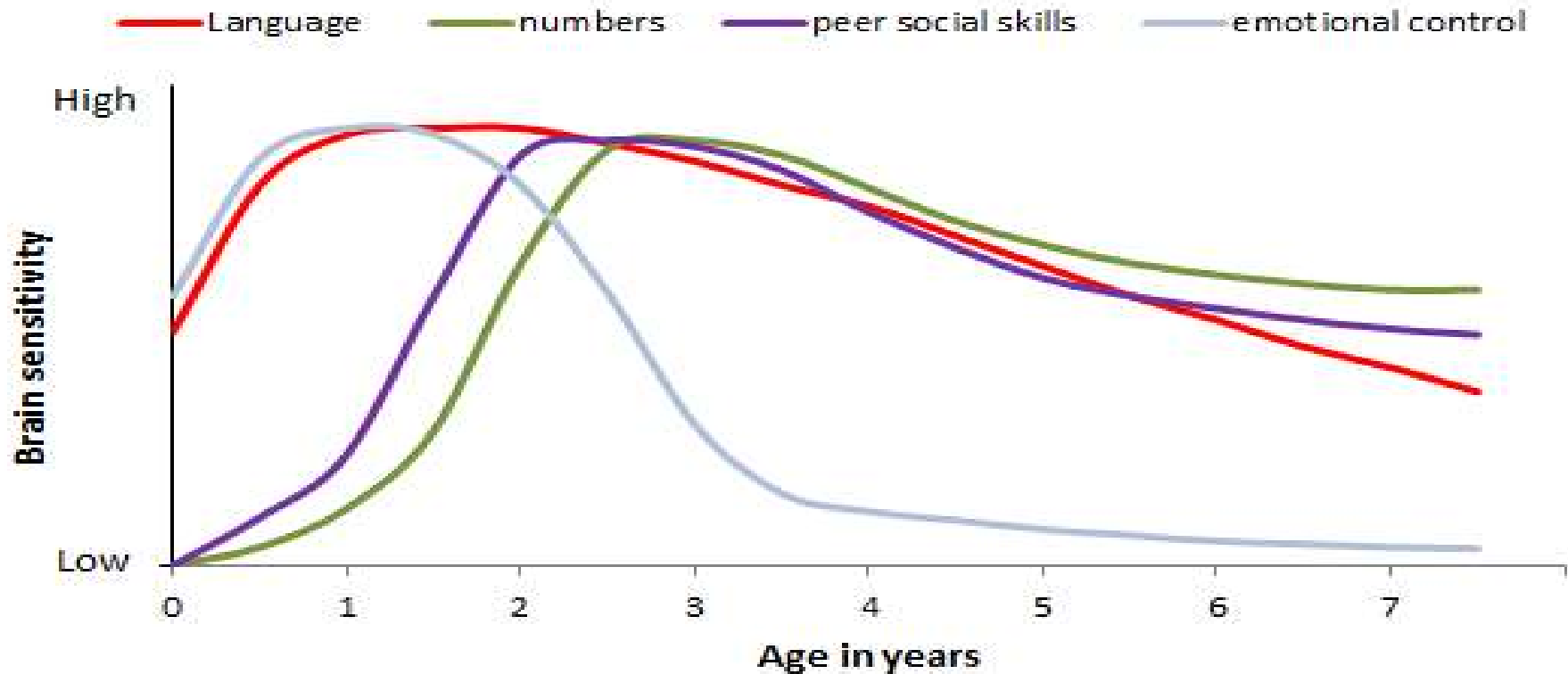
Programmes do not scale; it is culture that scales, and culture is the hallmark of effective leadership. Culture is about system learning, system-wide innovation, and purposeful collaboration



**Building strong foundations**

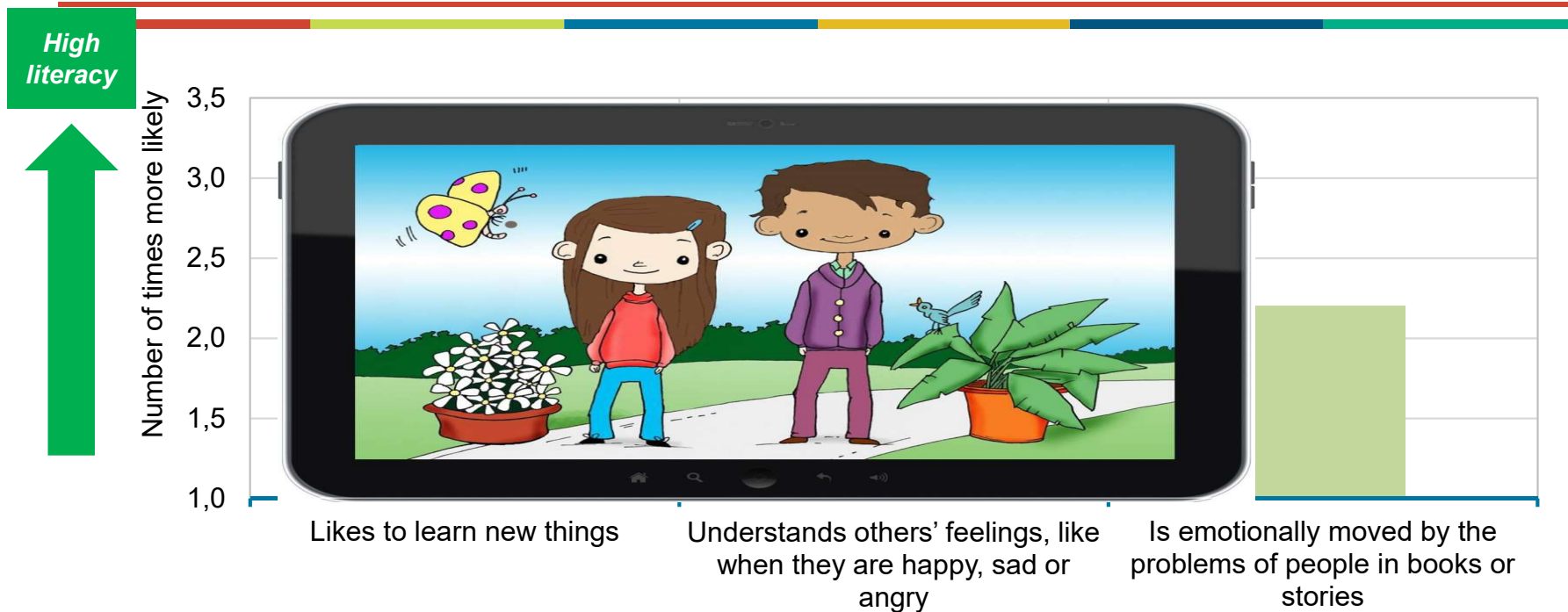


# Brain sensitivity of highly important developmental areas peak in the first three years of a child's life





# OECD's new 'Baby PISA' Teacher reports on children literacy development in Estonia



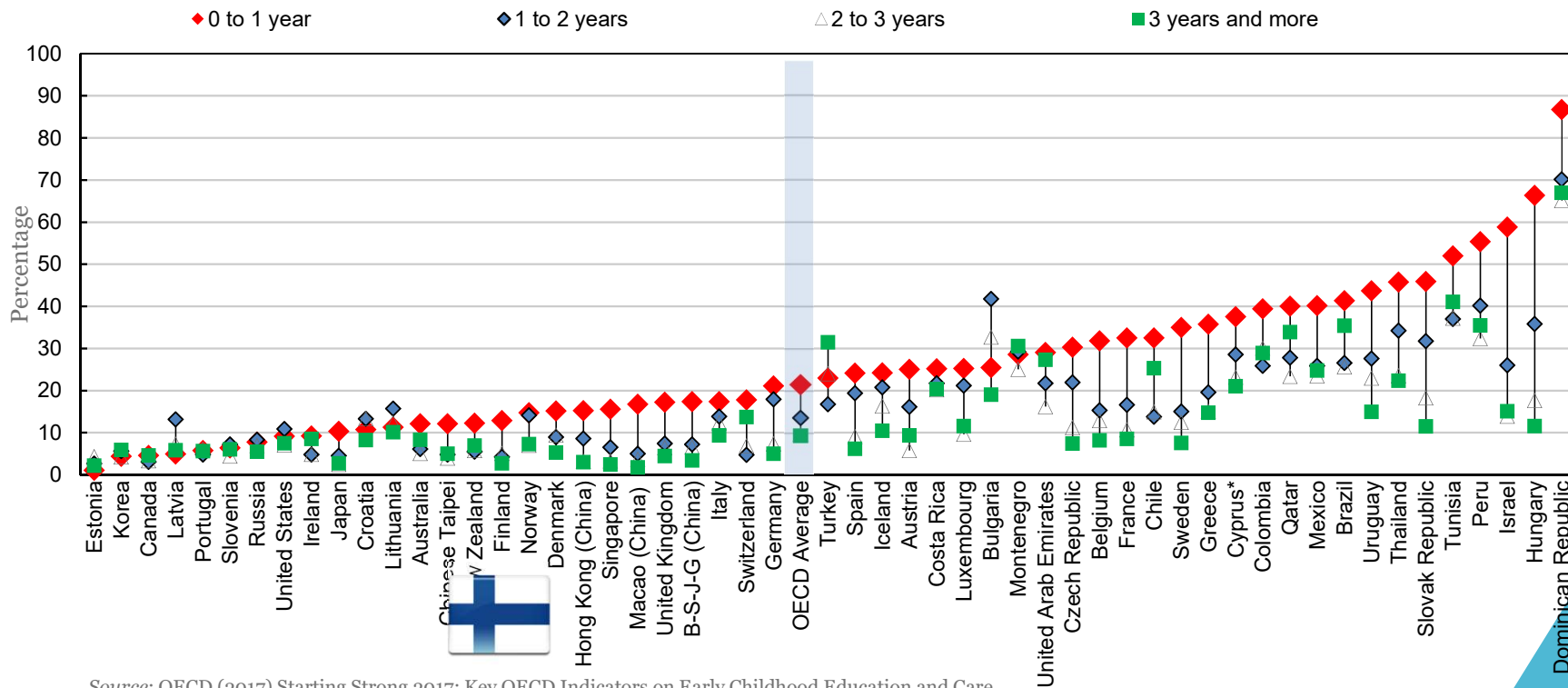
Source: IELTS Main Study



# Students who attended early childhood education for less than one year are also less likely to be highly proficient in science at the age of 15



Proportion of low performers among 15-years old students according to the number of years spent in early childhood education (2015)



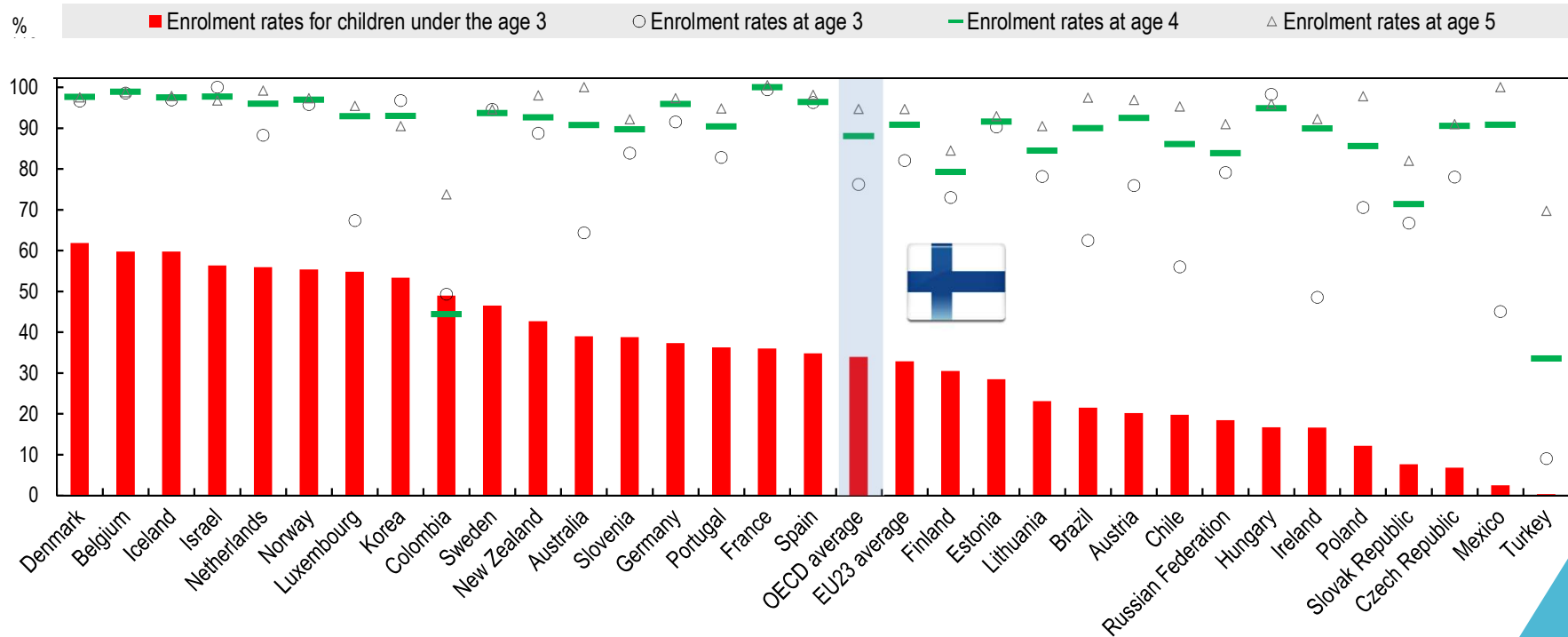
Source: OECD (2017) Starting Strong 2017: Key OECD Indicators on Early Childhood Education and Care



# Enrolment in early childhood education and care



Enrolment rates in early childhood education and primary education, by age (2016)



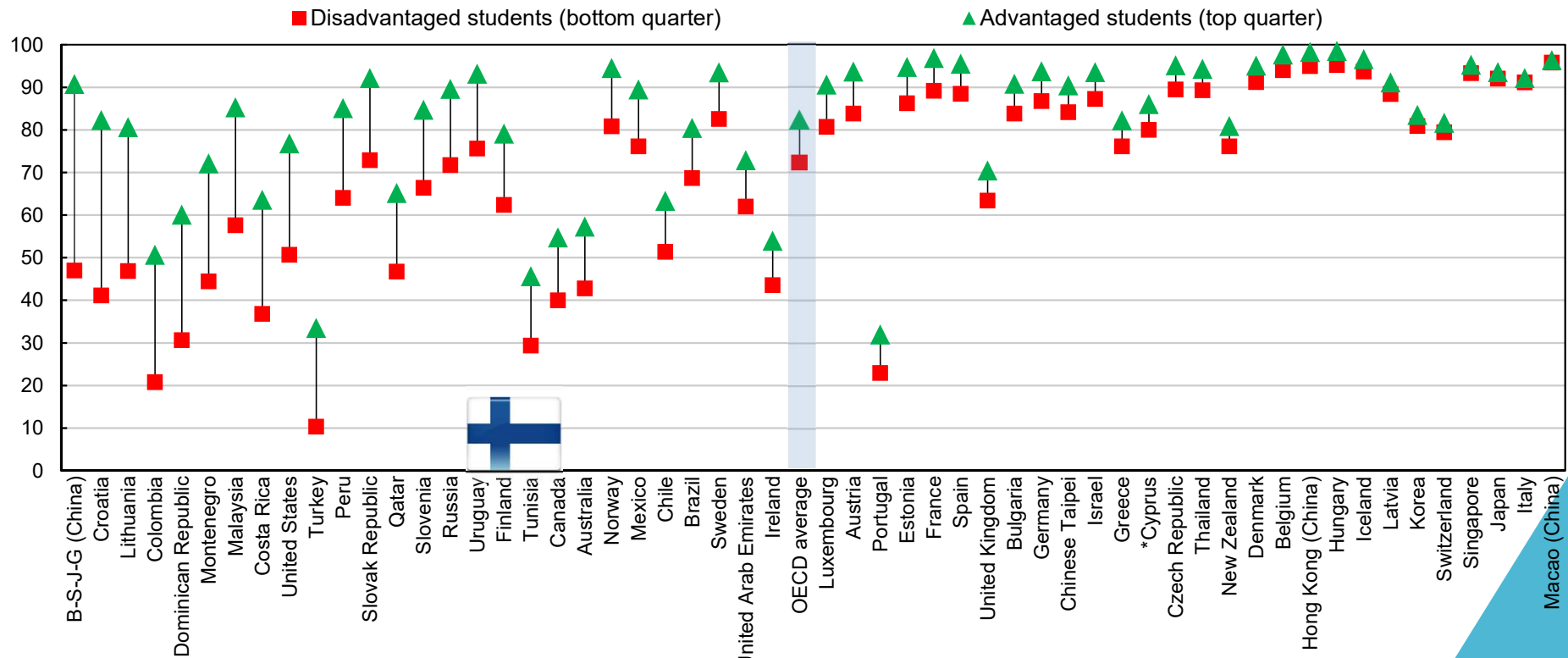
Source: OECD (2018), *Education at a Glance 2018: OECD Indicators*



# Children who need it most are **less likely** to have access to early childhood education and care



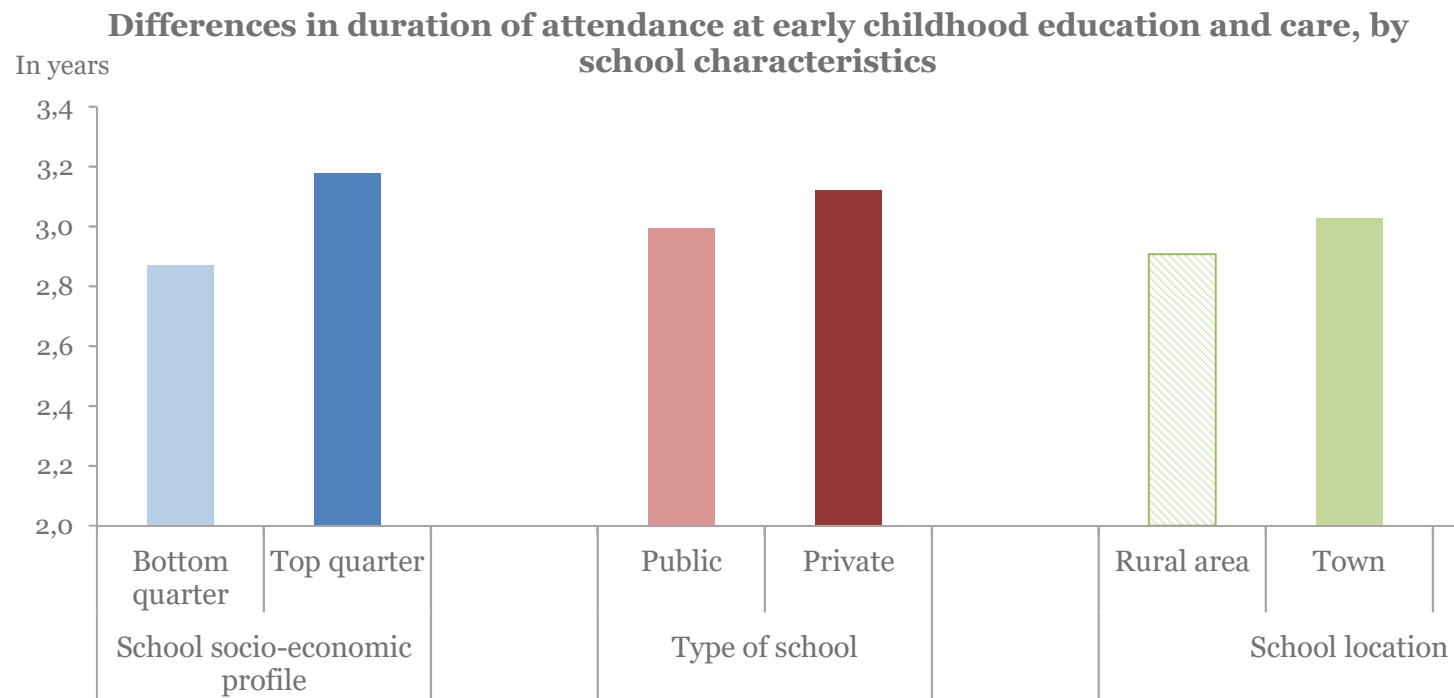
Percentage of 15-year-old students who had attended preschool for two years or more, by socio-economic status (2015)



Source: *Starting Strong 2017, Key OECD Indicators on Early Childhood Education and Care*; PISA online education database



# The many sources of inequalities in participation in early childhood education and care



Source: OECD, Programme for International Student Assessment database



## Policy levers



Policy Review:  
Quality beyond  
Regulations  
(Starting Strong VI)

Curriculum and  
pedagogy

Engaging families and  
communities

Workforce development  
and working conditions



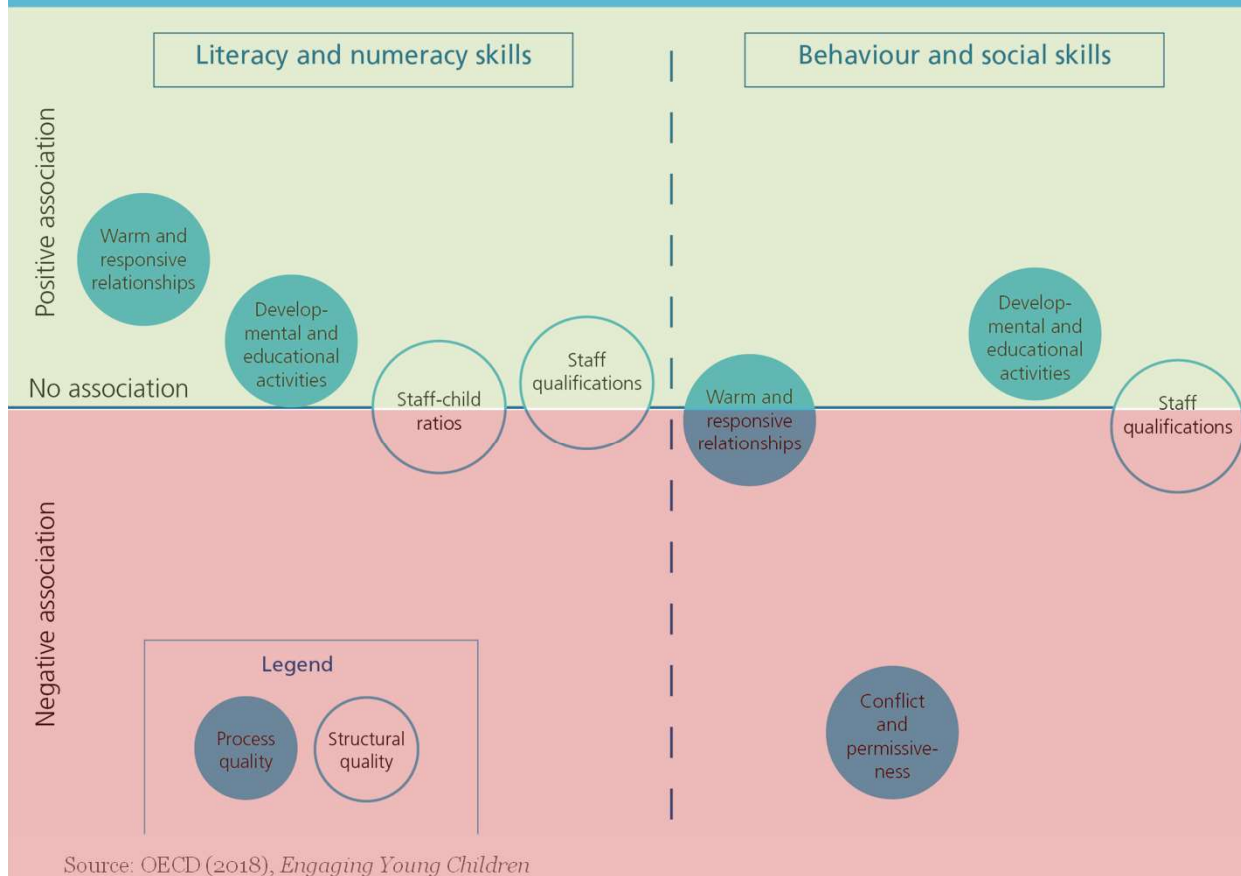
Engaging young children:  
Literature review &  
Meta-analysis

Standards and  
governance

Data and monitoring



# Both structural and process aspects relate to children's development and learning

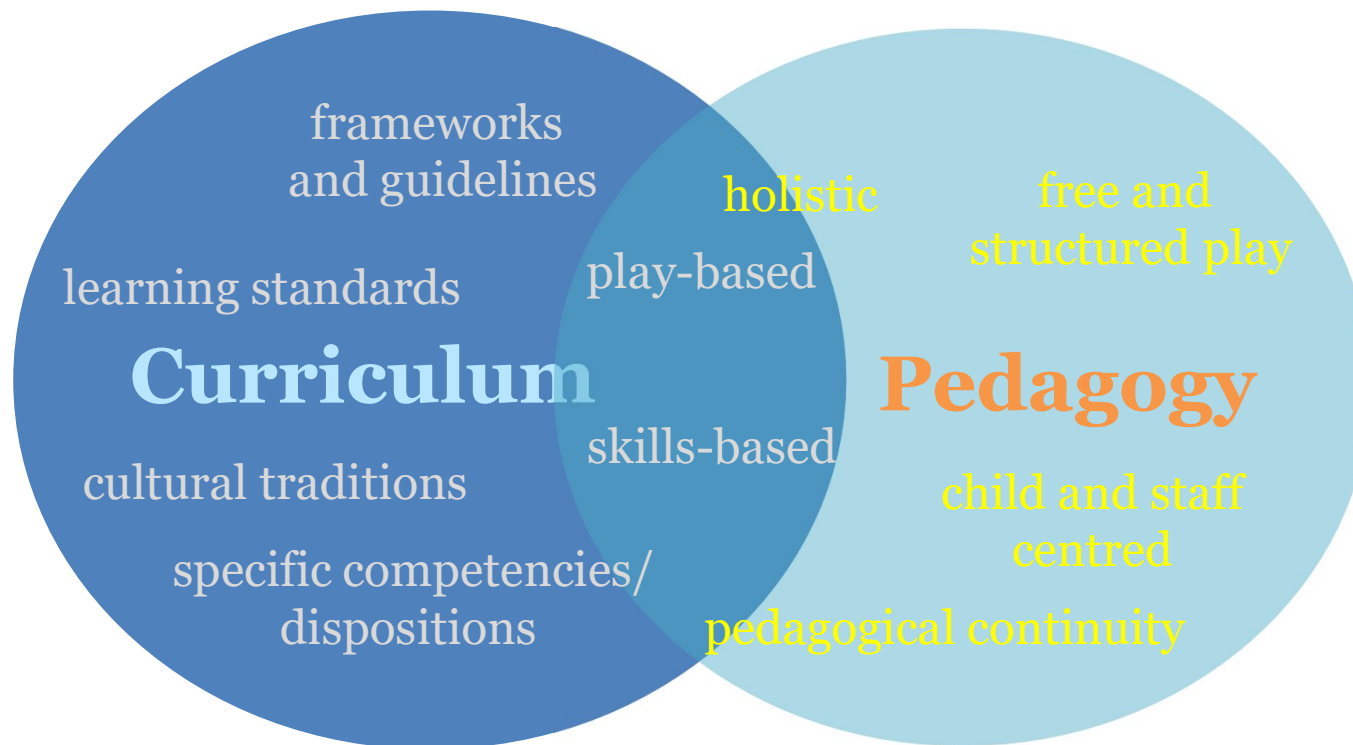


**Process quality** dimensions favour higher levels of academic and social-behavioural skills.

**Structural quality** features are less directly associated with these skills, but create the conditions for higher process quality.



Curriculum design is instrumental in shaping teachers' and parents' pedagogical approaches



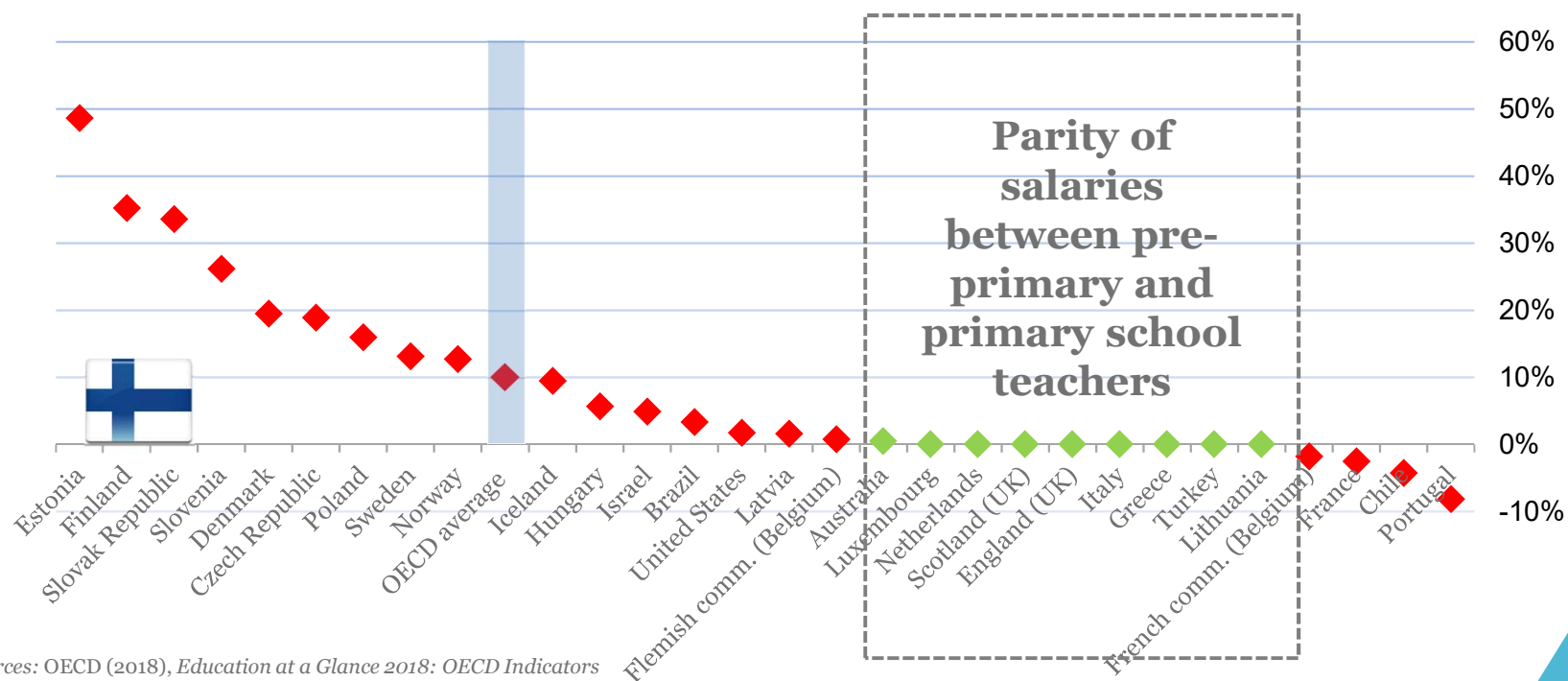




# Good working conditions are needed to attract a qualified workforce



**In almost half of OECD countries, pre-primary teachers are paid less than primary teachers (in % of pre-primary teacher salary) (2016)**



Sources: OECD (2018), *Education at a Glance 2018: OECD Indicators*



# Snapshot of children's media use (UK)



**5 %** have their own smartphone  
**42%** have their own tablet



**97%** watch TV, on average for  
**13<sup>1/2</sup> hours** a week

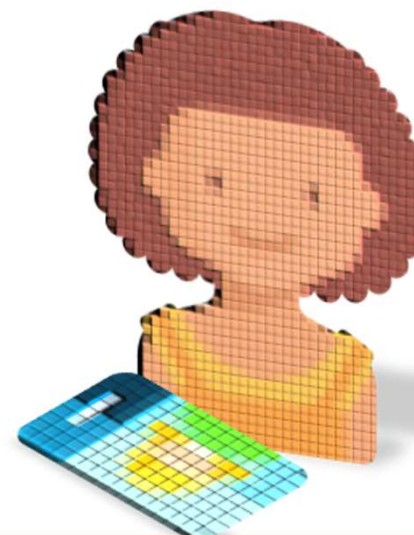


**67%** go online, for nearly **9<sup>1/2</sup>h** a week  
**4%** have a social media profile



**63%** play games, for **7<sup>1/2</sup>** hours a week

**5-7s**



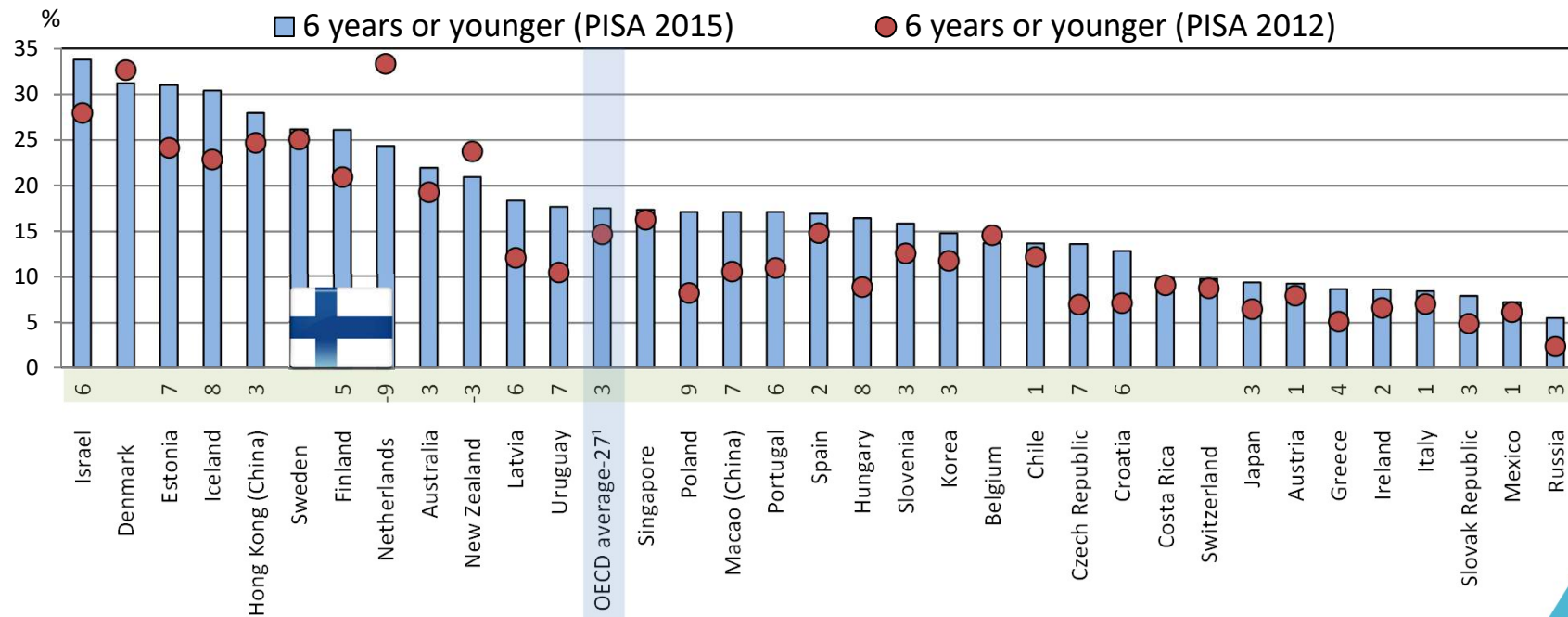
Source: adapted from Ofcom, 2019



# Trends in children's media use

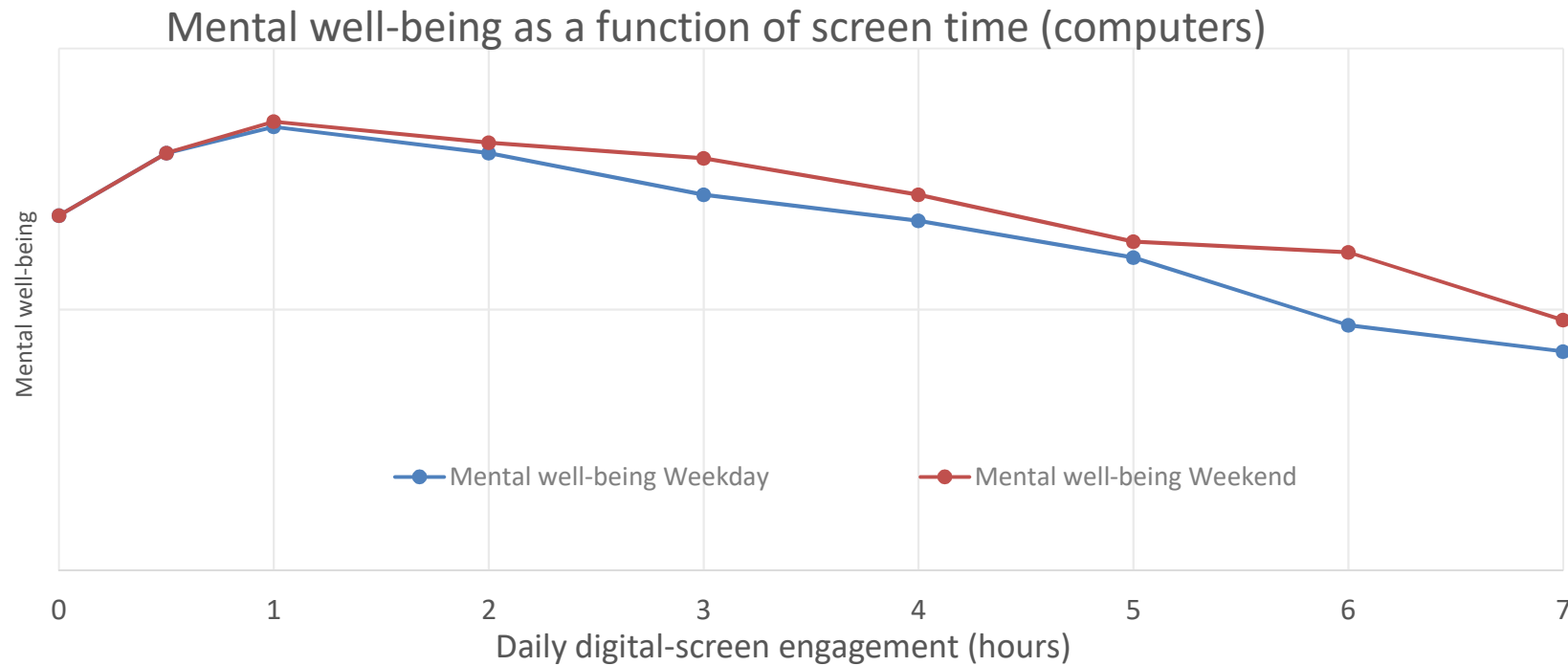


Change between 2012 and 2015 in the share of children who used the Internet when they were **six years old** or younger





# The “Goldilocks Effect: time spent online and mental well-being



Source: Adapted from Przybylski & Weinstein, 2017





## What policy can do



- Adopt “whole school approach” to resolving safety issues
- Develop and enact online safety policies and procedures
- Establish coherent (cyber)bullying policies
- Incorporate e-safety in the curriculum
- Support family-school partnerships
- Harness the power of peers



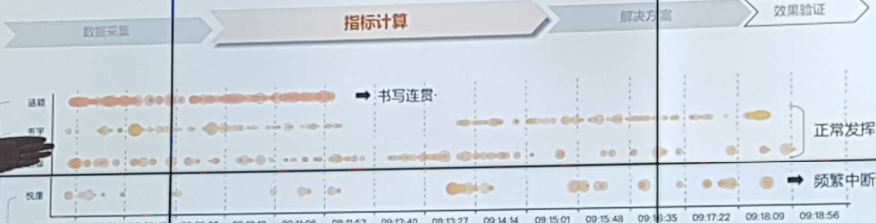




# 数字画像

《10月24日口算》-共3部分，60道题

坐标：时间轴  
直径——单位时间（秒）内有效书写点数，越大书写越快  
颜色——笔感压力值，偏绿色压力小，偏红色压力大



姓名	完成率 (作答数/总题数)	正确率 (正确数/作答数)	得分率 (正确数/总题数)	总用时 s	书写时长 s	中断时长 s	中断时长占比	中断+0 次数	分析结论
通颖	100%	100.0%	100.0%	247	184	63	25.5%	3	稳定精准，书写连贯
书宇	100%	93.3%	93.3%	544	210	334	61.4%	13	“进位”计算时，常有加、乘混淆情况
羽菲	87%	100%	86.7%	665	174	491	73.8%	24	稳扎稳打，即时验算
悦康	58%	100%	58.3%	581	88	493	84.9%	16	频繁中断，注意力不集中



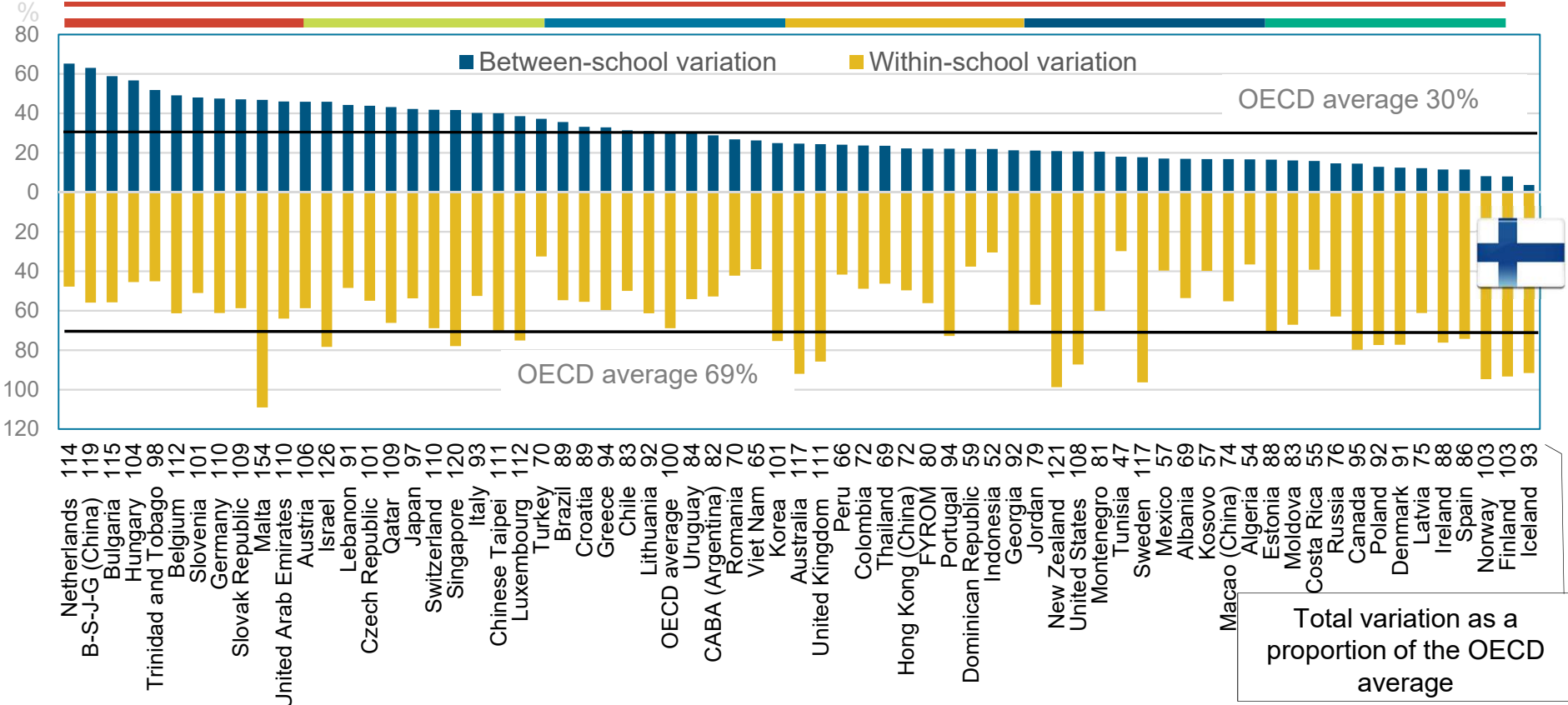


# TOWARDS SUSTAINABLE SCHOOLS

Figure I.6.11

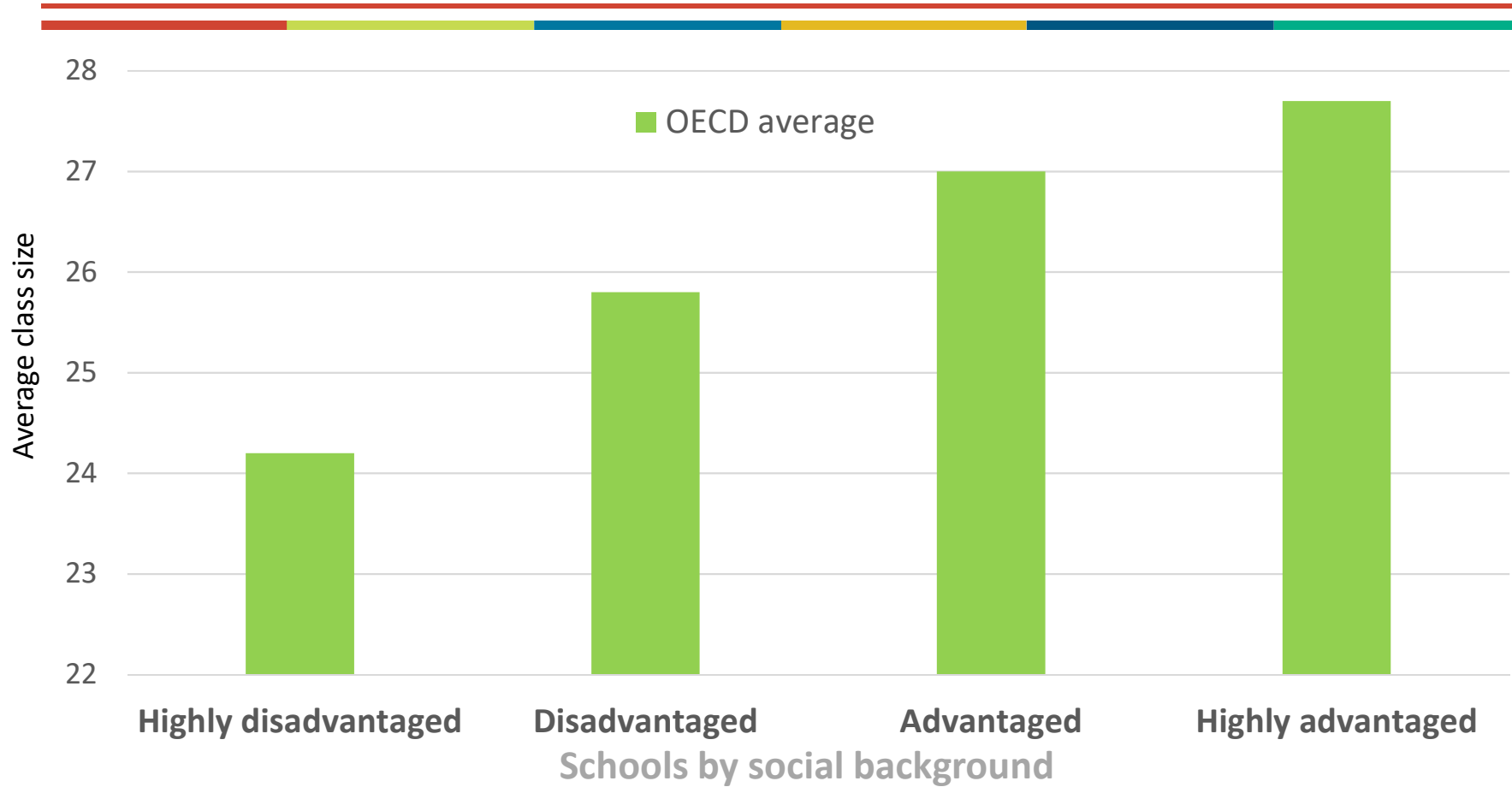
# Consistent quality

Variation in science performance between and within schools



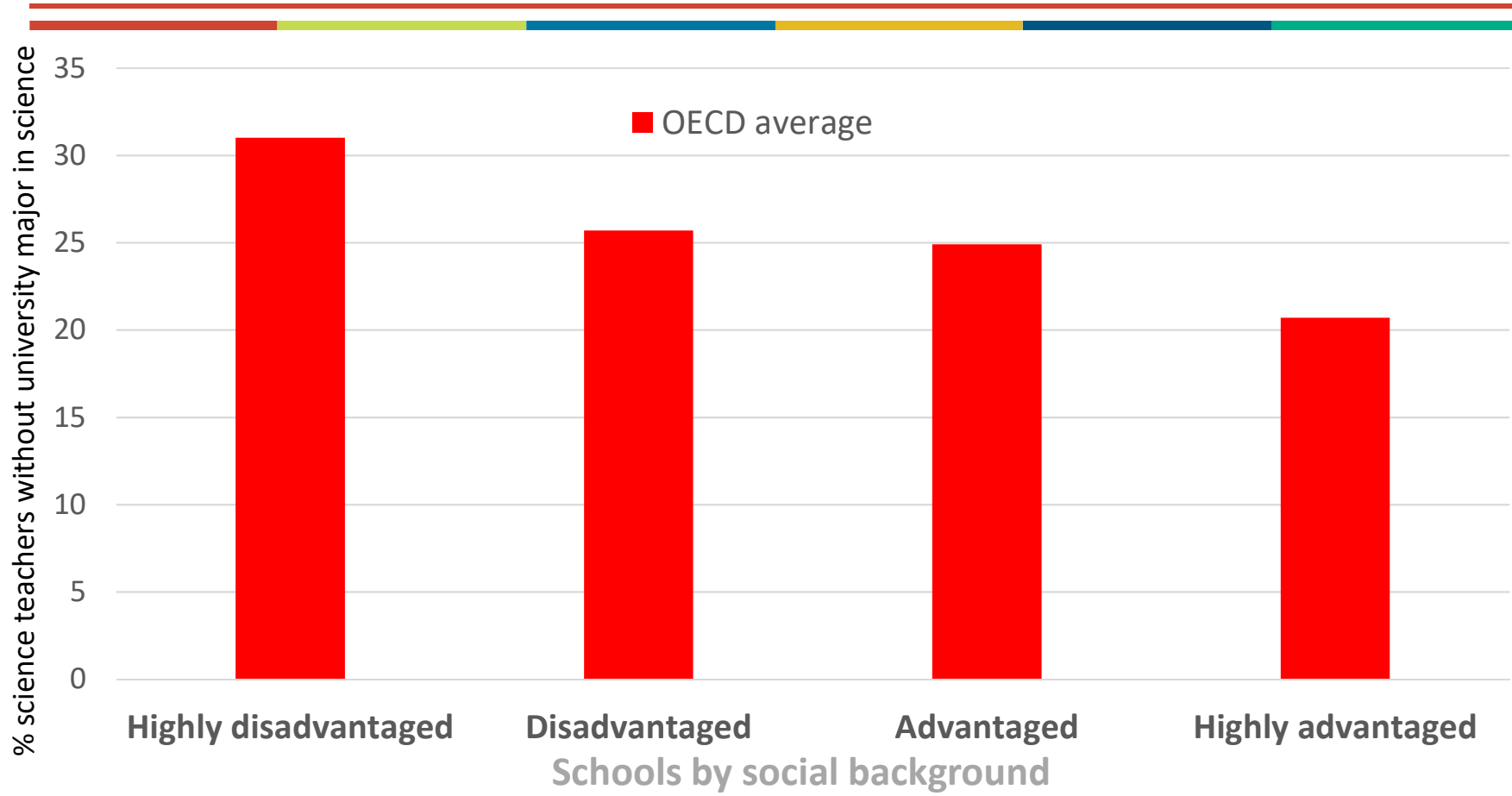
# Aligning resources with needs

Average class size in <9<sup>th</sup> grade>, by quarter of school socio-economic profile



# Aligning resources with needs

Science teachers without a university major in science, by school socio-economic profile (OECD Average)



# Making teaching not just financially, but intellectually more attractive

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- Public confidence in profession and professionals
- Professional preparation and learning
- Collective ownership of professional practice
- Decisions made in accordance with the body of knowledge o the profession
- Professional responsibility in the name of the profession and accountability towards the profession

# Policy levers to teacher professionalism

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

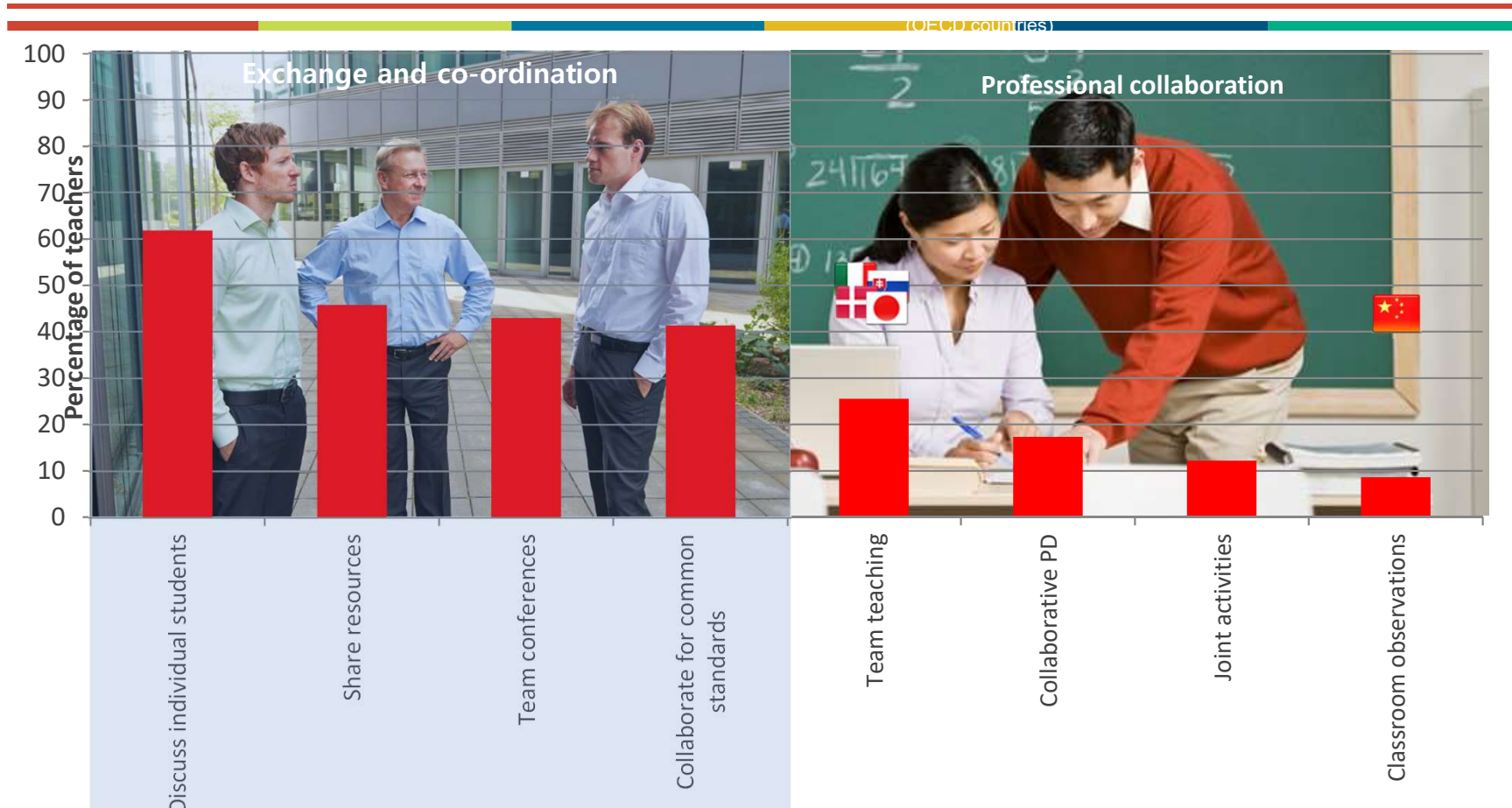
**Teacher professionalism**

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 professional collaboration

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



# Teachers' self-efficacy and professional collaboration

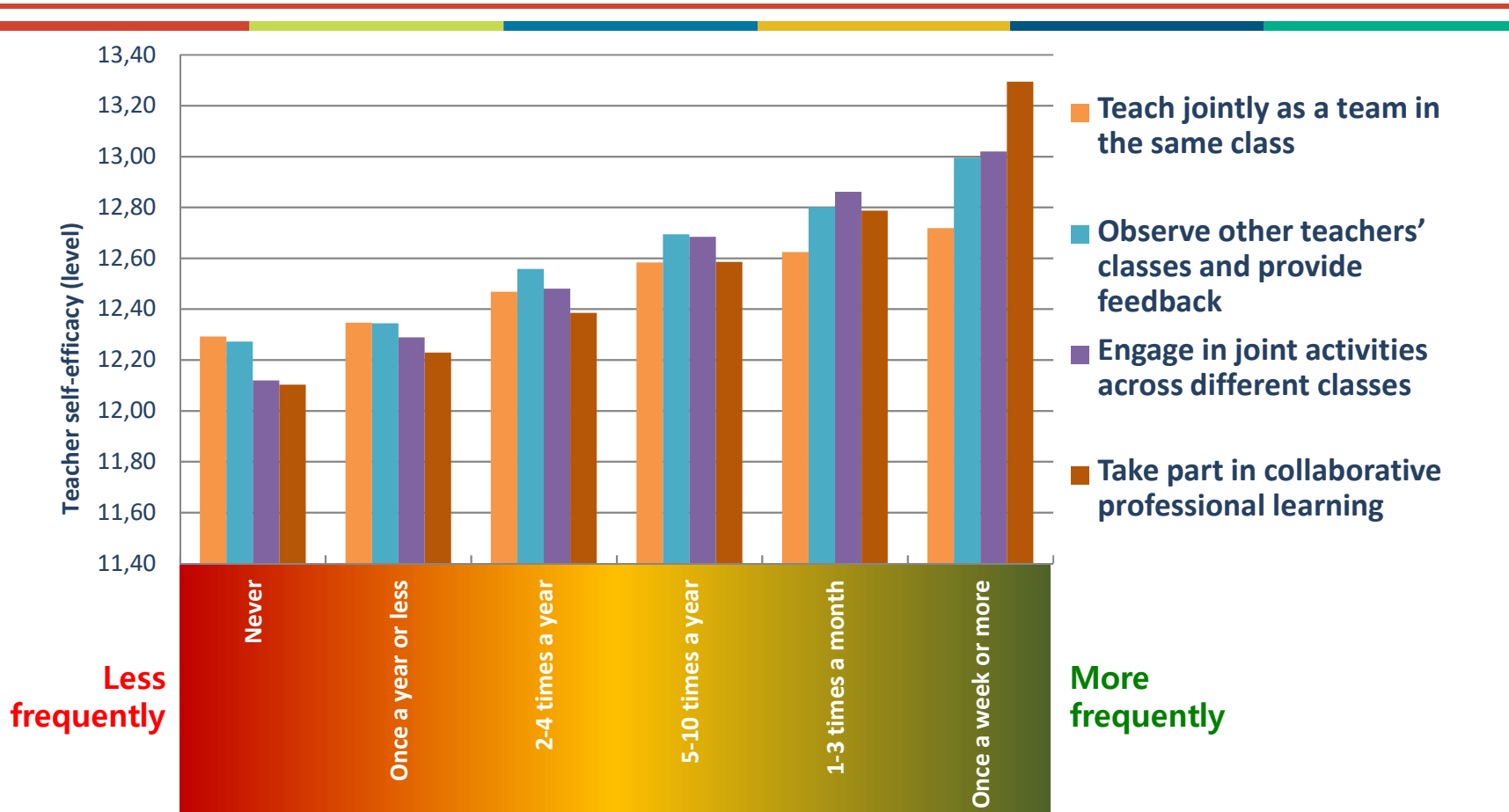
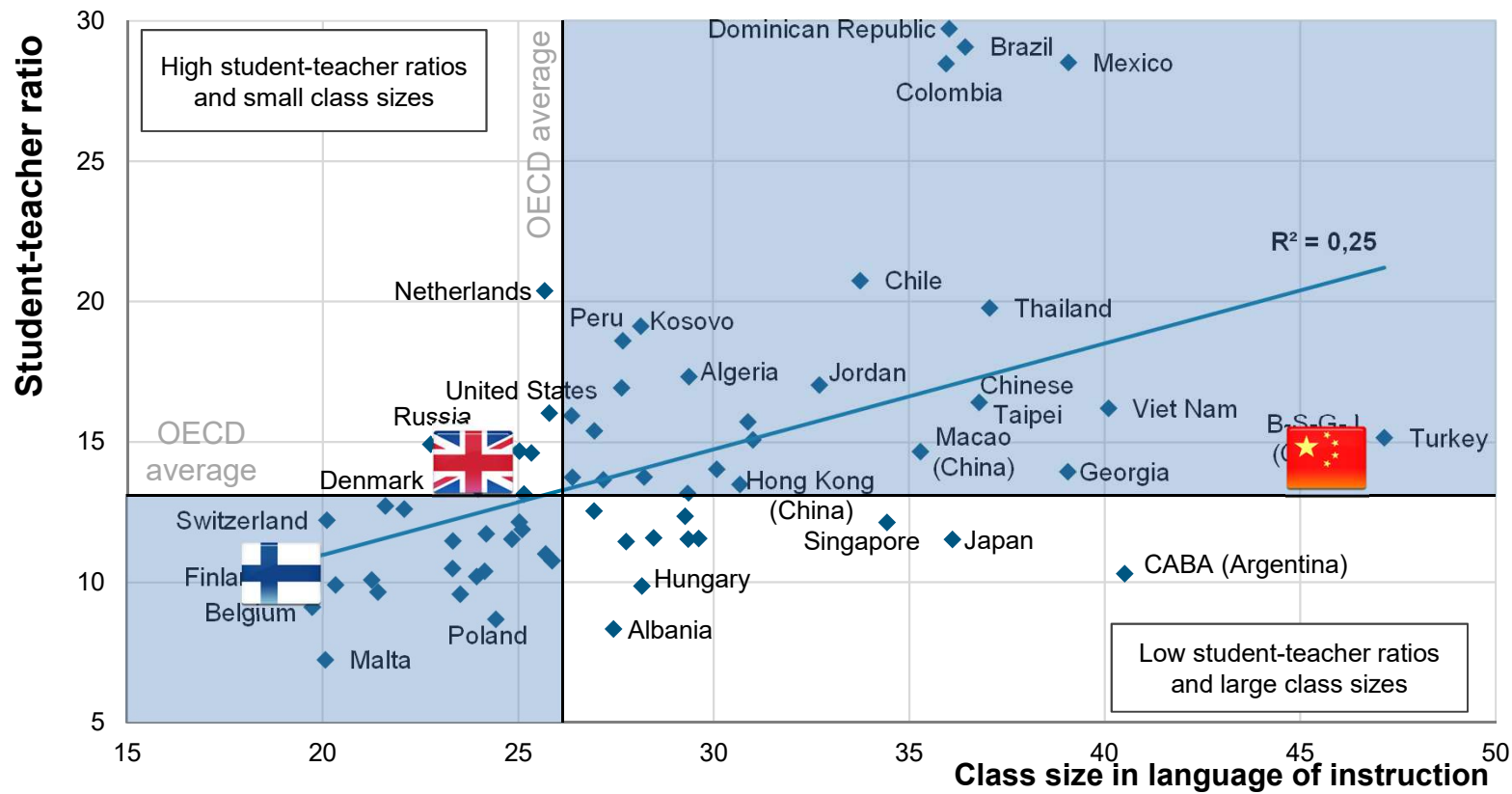


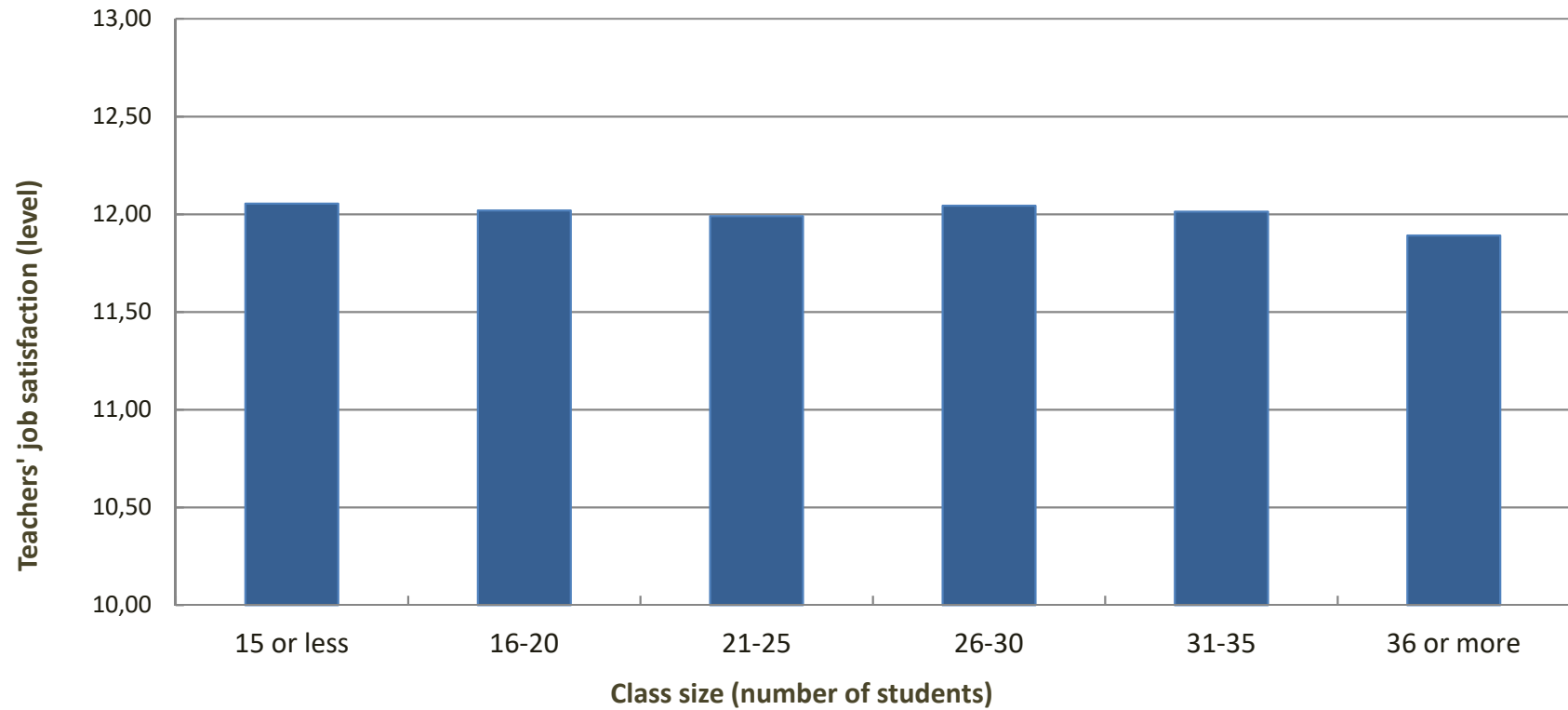


Figure II.6.14

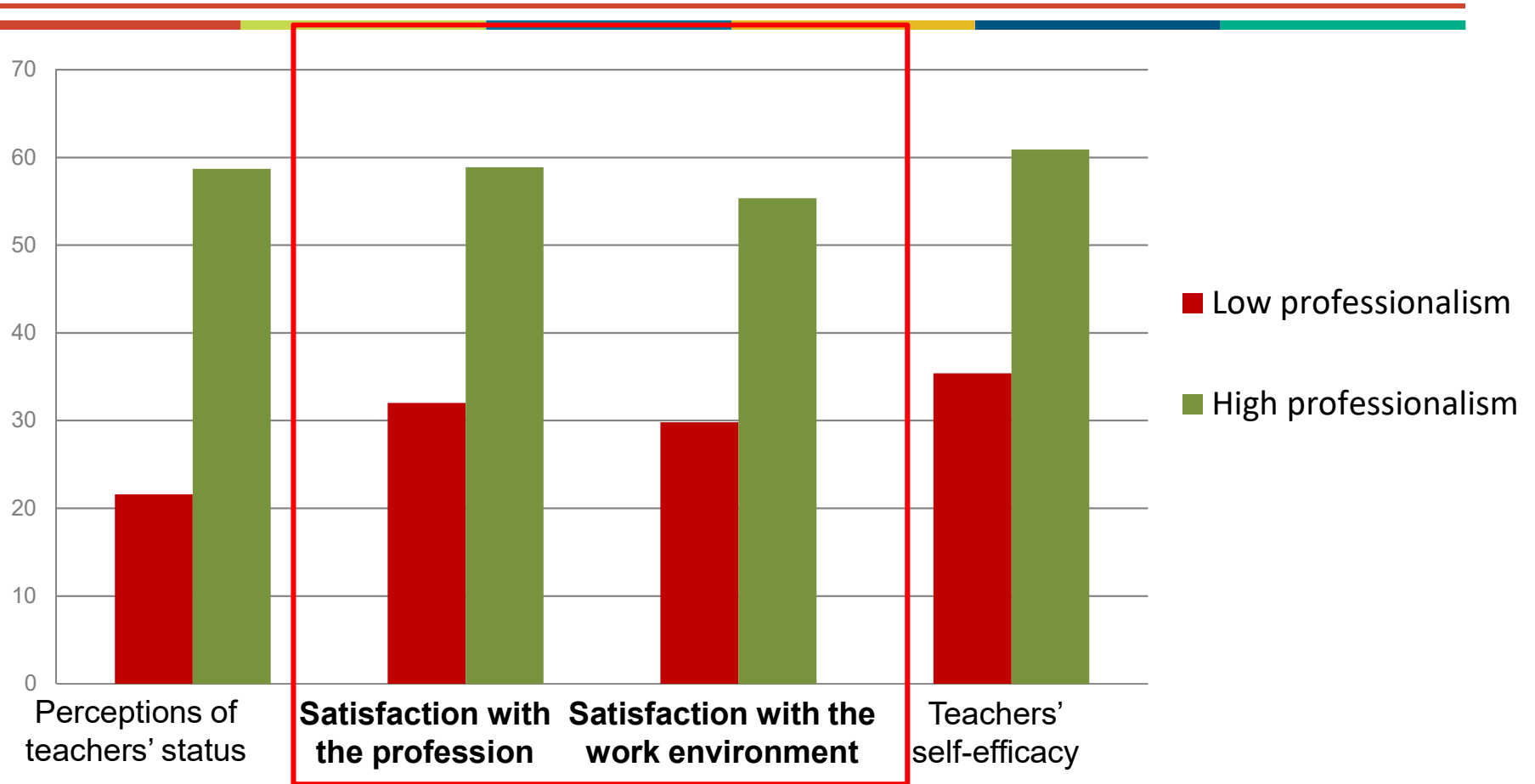
# Student-teacher ratios and class size



# Teachers' job satisfaction and class size



# Teacher job satisfaction and professionalism



# Making transformation happen

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Setting the direction

People are more likely to accept changes that are not solely in their own interests if they understand the reasons for these changes and can see the role they should play within the broad strategy.



Engaging the profession



Building capacity



Looking outward

# Making transformation happen

---

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Engaging the profession

Educational leaders are rarely successful with reform unless they build a shared understanding and collective ownership for change, and unless they build capacity and create the right policy climate, with accountability measures designed to encourage innovation rather than compliance



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Looking outward

School systems that feel threatened by alternative ways of thinking get trapped in old practice. The ones that progress are those that are open to the world and ready to learn from and with the world's education leaders.



# Thank you

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- The complete micro-level database

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