Educating for the future
G20 Symposium

Tokyo, 5 September 2019
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Trends in science performance (P

570

550

510

490

470

450

2006   2009   2012   2015

Trends in science performance
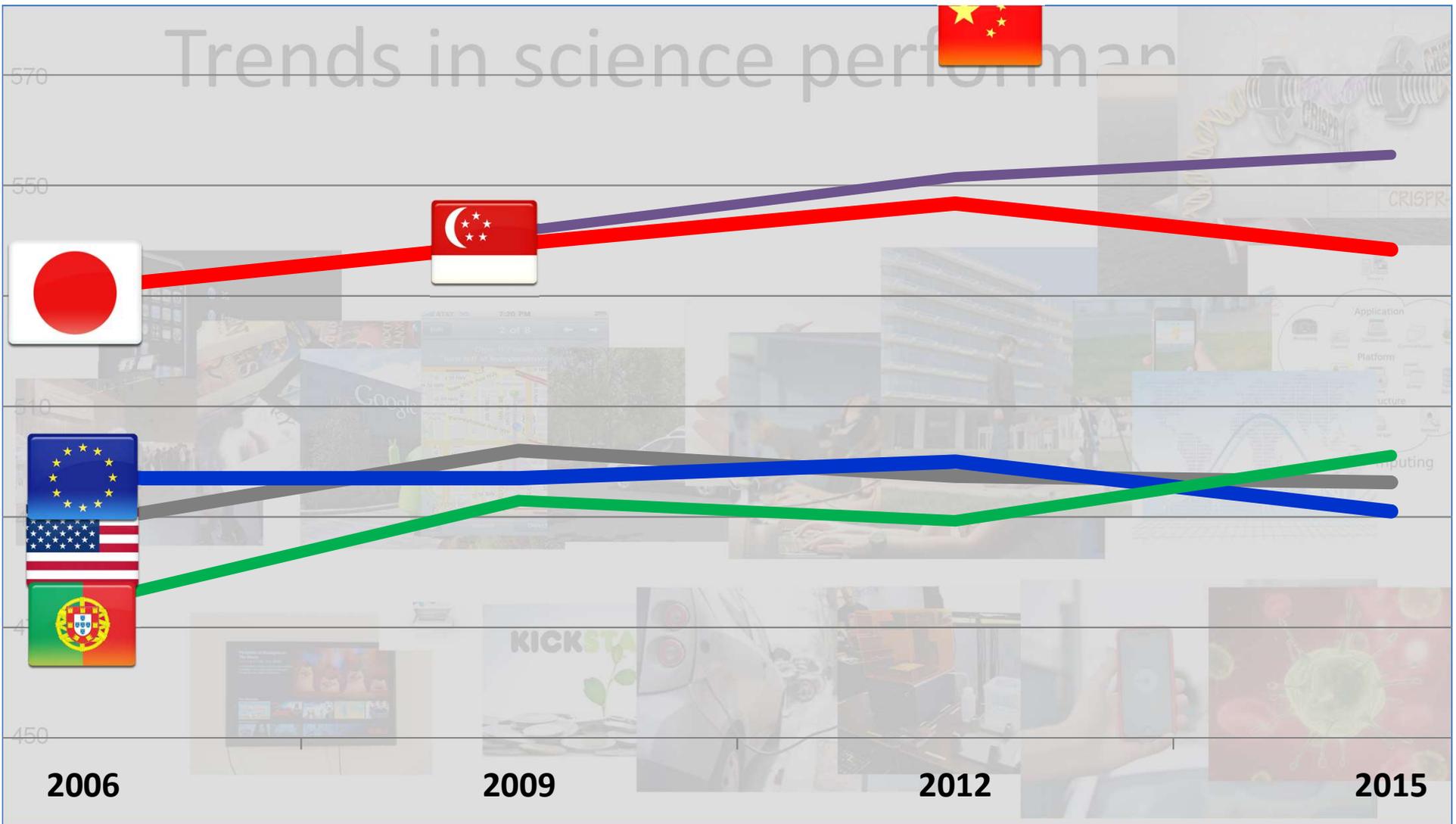
Figure II.6.23

Learning time and science performance (PISA)
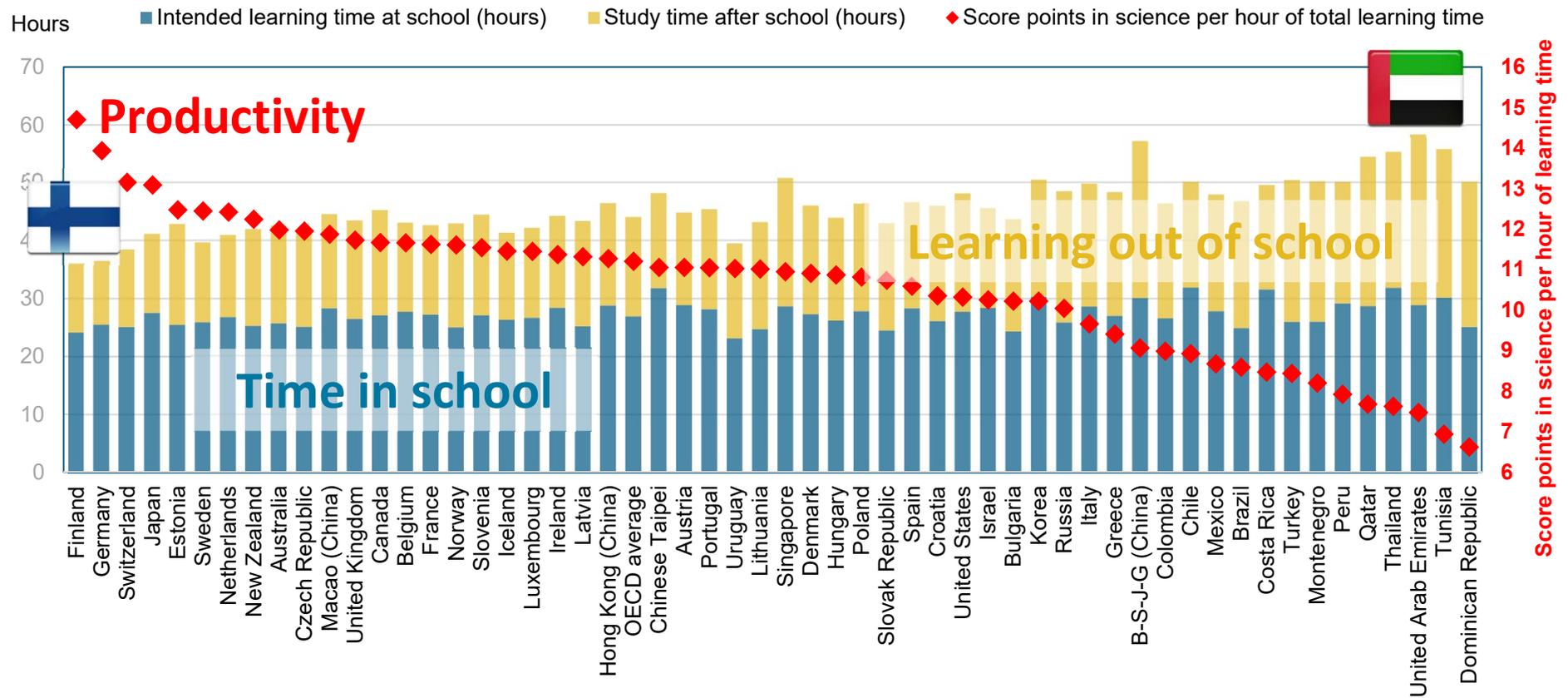
Changing education can be like moving graveyards

- 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

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)

World middle class share of world population
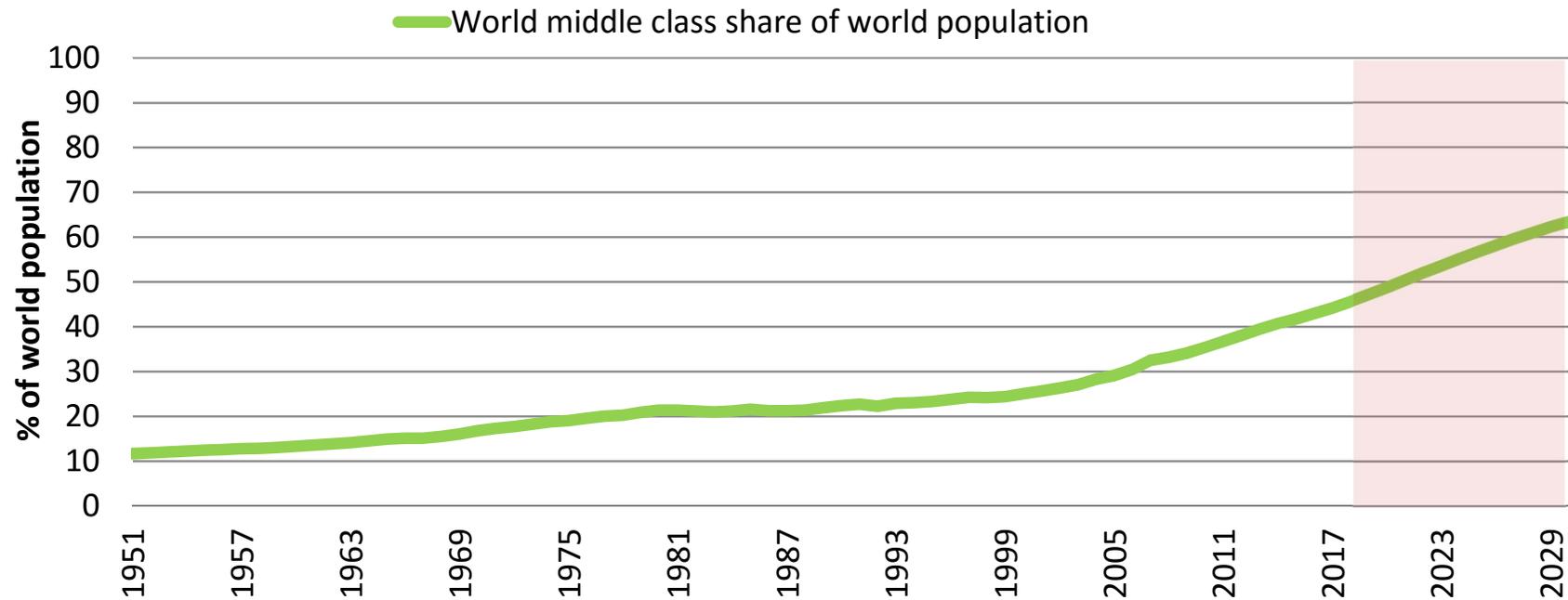
Source: Kharas, H. (2017), The unprecedented expansion of the global middle class, an update, https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf. Kharas, H. (2010), The emerging middle class in developing countries, https://www.oecd.org/dev/44457738.pdf.

Figure 1.2

Growing unequal

Income gaps continues to grow

Trends in real household incomes by percentile, OECD average, 1985-2015
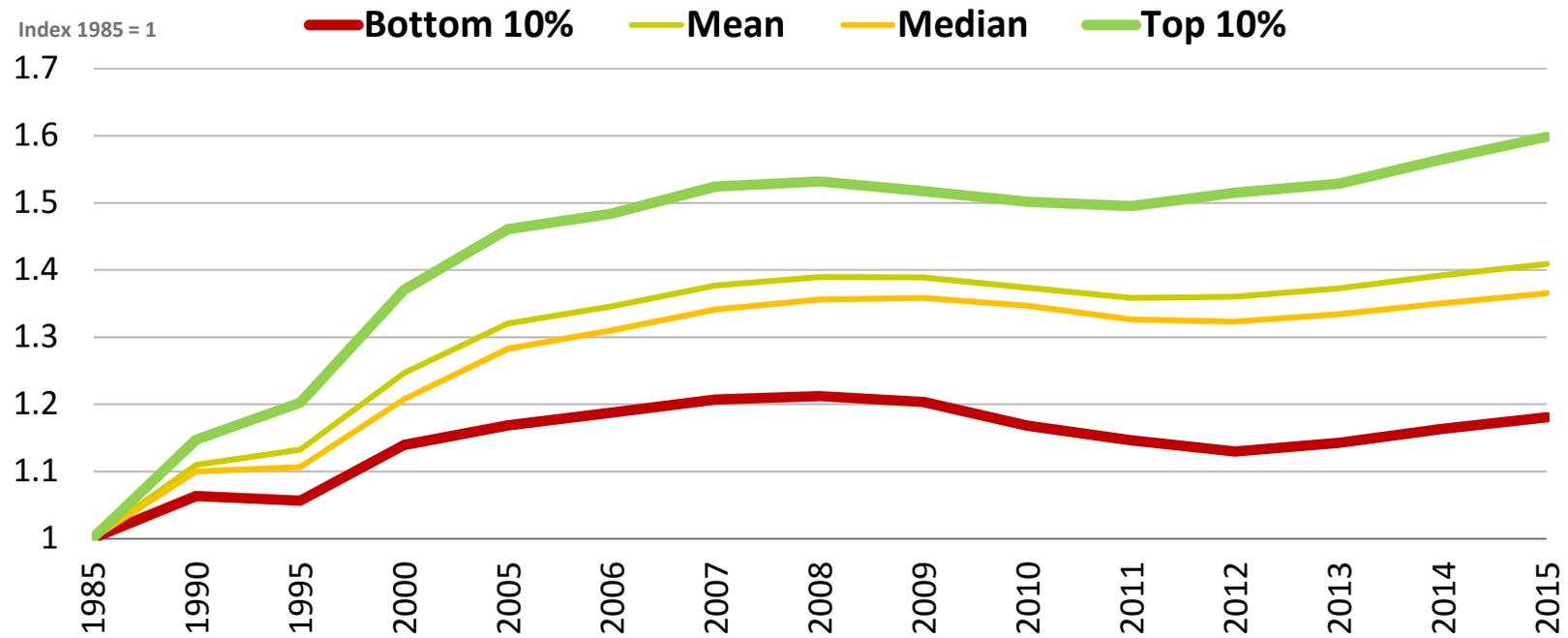
Source: OECD (2018), *A Broken Social Elevator? How to Promote Social Mobility*, https://doi.org/10.1787/9789264301085-en.

Figure 2.1

More people on the move

Estimates of international migrant stock by region of destination, 1990-2017
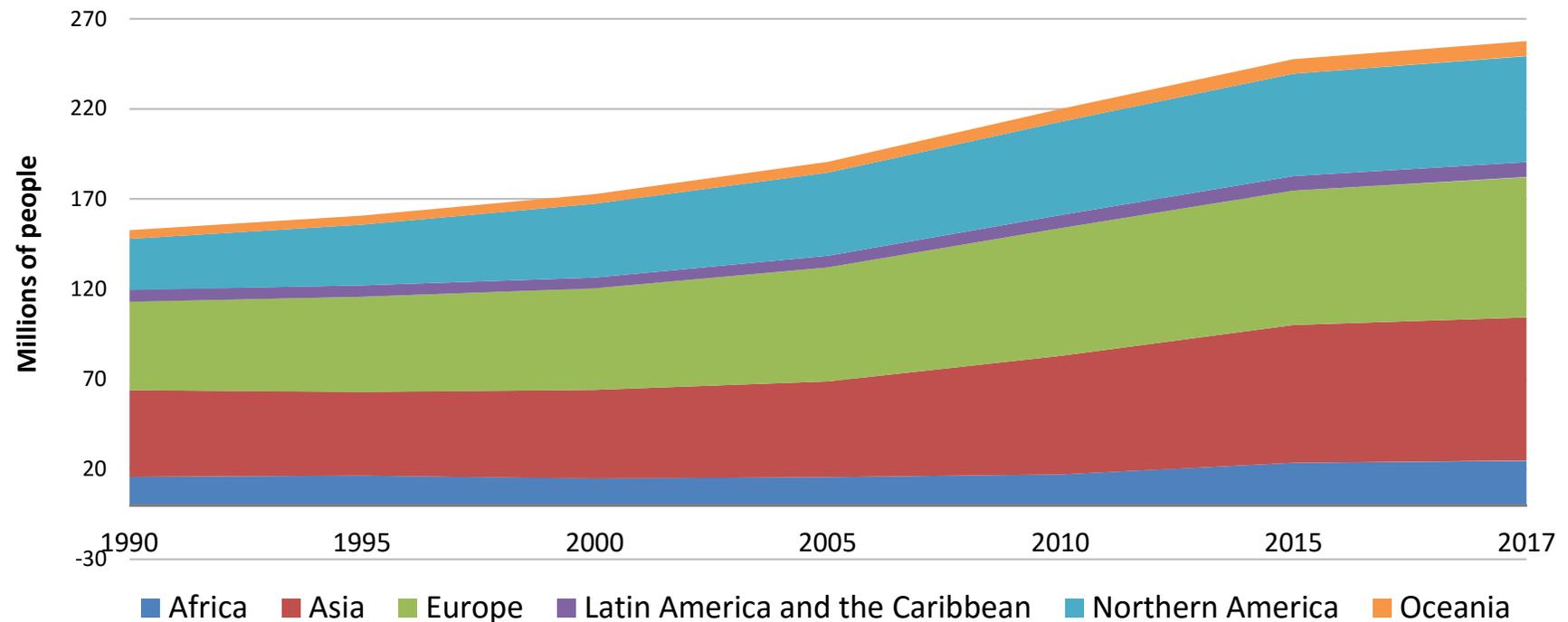
Source: United Nations (2017), "International migrant stock: The 2017 revision" (database), www.un.org/en/development/desa/population/migration/data/.

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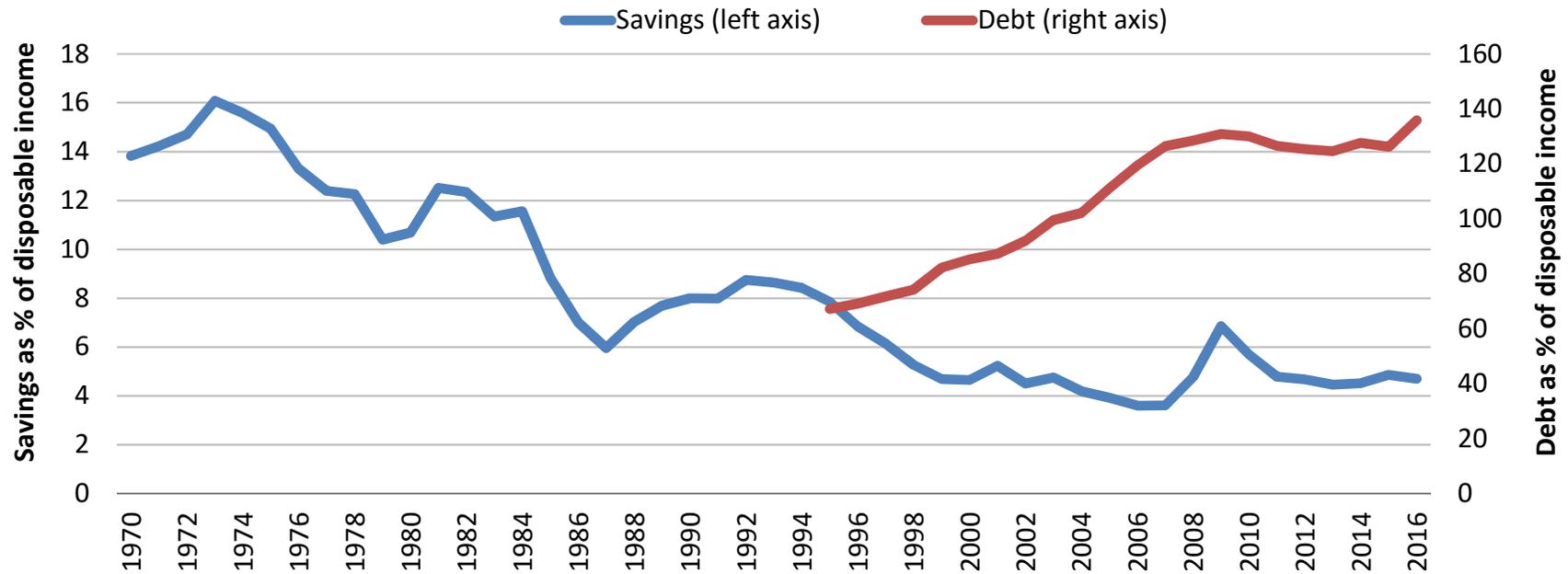
Source: OECD (2018), *OECD National Accounts Statistics* (database), https://stats.oecd.org/.

Figure 3.9

Access to Access

Number of mobile broadband subscriptions per 100 inhabitants, OECD average, 2009-2017
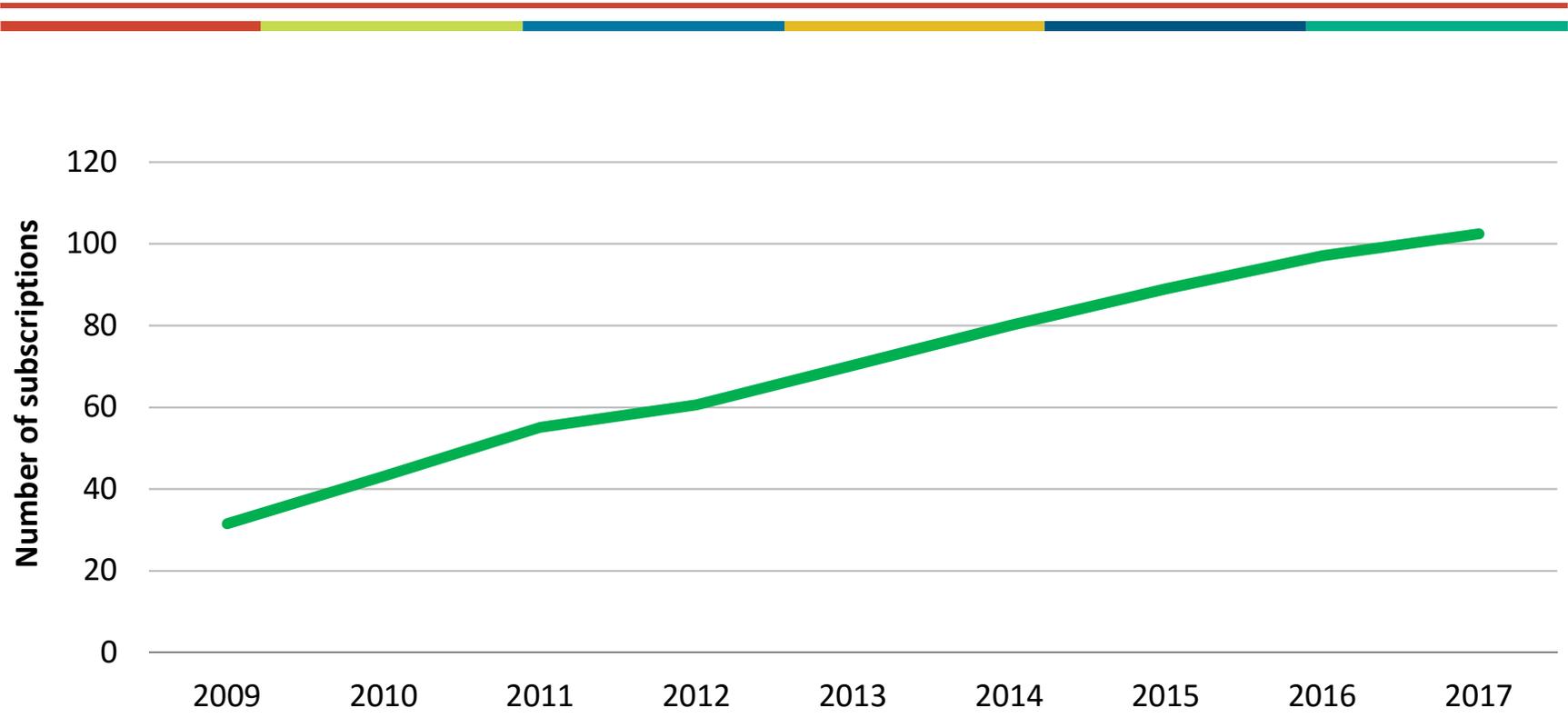
Source: OECD (2018), "Mobile broadband subscriptions" (indicator), https://doi.org/10.1787/1277ddc6-en.

Figure 5.1

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

%

■ Boys   ◆ Girls

90
80
70
60
50
40
30
20
10
0

Chinese Taipei -2
Sweden -9
France -5
Portugal
Greece -2
Singapore
Thailand -7
Macao (China) -2
Brazil
Spain
United Kingdom
Bulgaria
Hong Kong (China)
Korea -7
Belgium -4
Denmark -4
Croatia -5
Israel -10
New Zealand -4
Netherlands -3
Uruguay
Hungary 4
Australia
OECD average -3
Dominican Republic
Ireland -7
Poland -3
Costa Rica 3
Lithuania
Japan -5
Mexico
Russia -8
Czech Republic
Italy
Peru
Colombia 4
Finland -6
Chile
Latvia
Slovak Republic
B-S-J-G (China) 11
Switzerland -3
Austria
Luxembourg
Iceland
Germany
Estonia
Slovenia

The kind of things that are easy to teach are now easy to automate, digitize or outsource

Mean task input in percentiles of 1960 task distribution

- Routine manual
- Nonroutine manual
- Routine cognitive
- Nonroutine analytic
- Nonroutine interpersonal
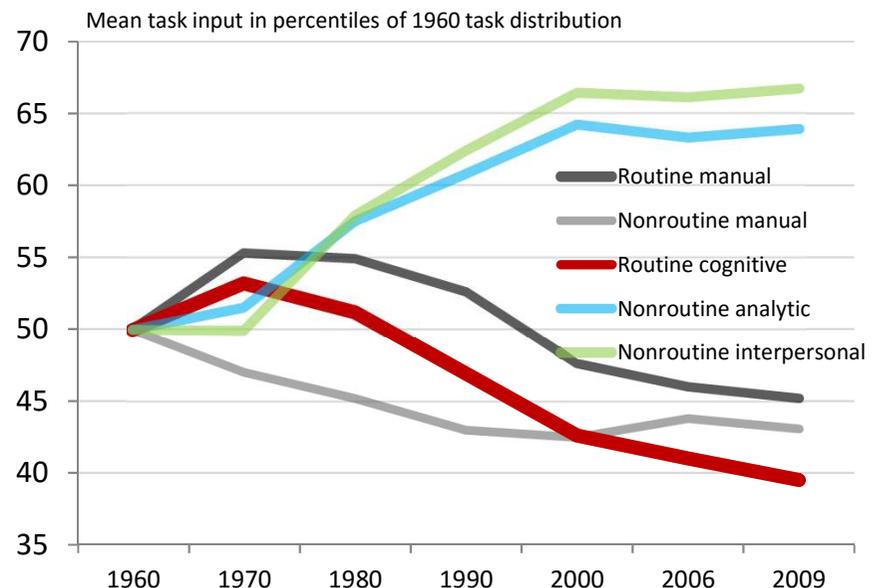
Education won the race with technology throughout history, but there is no automaticity it will do so in the future
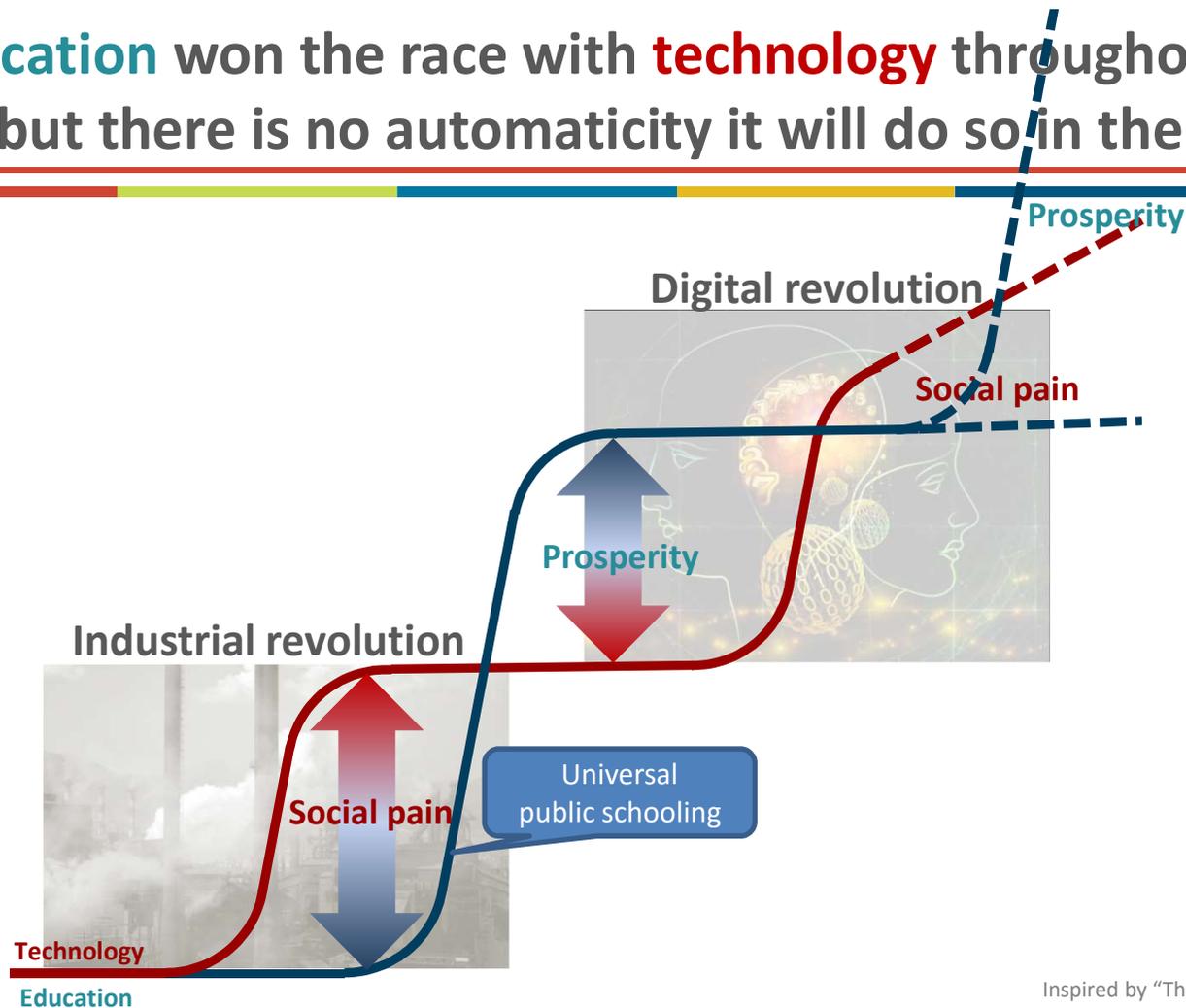
Prosperity

Digital revolution

Social pain

Prosperity

Industrial revolution

Social pain

Universal public schooling

Technology

Education

Society 5.0

Democratizing

Particularizing

Empowering

Concentrating
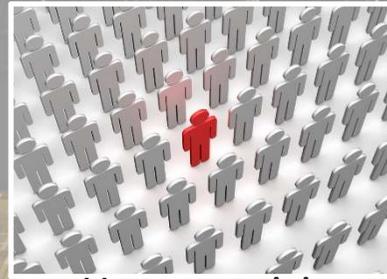
Homogenizing

Disempowering

The post-truth world where reality becomes fungible

- Virality seems privileged over quality
  in the distribution of information

- Truth and fact are losing currency

Scarcity of attention and abundance of information

- Algorithms sort us into groups of like-minded
  individuals create echo chambers that amplify our
  views, leave us uninformed of opposing arguments,
  and polarise our societies

Education for Society 5.0

Past education system	Emerging education system
Education system (treating it alone)	Education system as part of a bigger eco-system
Division of labour	Shared responsibility (Team Gakugei)
Traditional approach to analyse: "input to outcomes"	New ways to analyse: ""input, process and outcomes", valuing the "process"
Static curriculum with linear learning progression	Dynamic curriculum with non-linear learning progression
Bureaucratic accountability for compliance	Professional accountability and feedback for improvement
Focus on academic performance	Extend academic performance to cognitive, social and emotional outcomes and student well-being
Focusing on standardised testing	Extend assessment of learning to assessment for learning and assessment as learning

Student Agency

It is about **acting** rather than being acted upon; **shaping** rather than being shaped**; making responsible decisions and choices** rather than accepting those determined by others
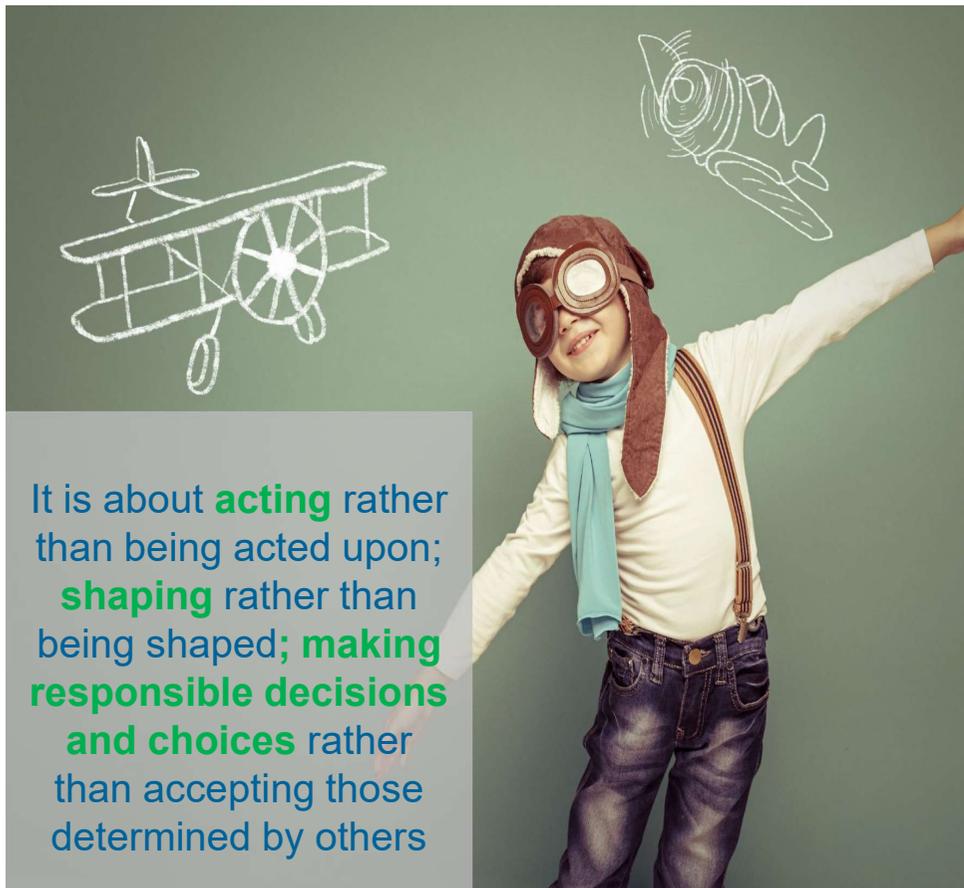
Student Agency:
- the belief that students have the will and the ability to positively influence their own lives and the world around them.
- the capacity to set a goal, reflect and act responsibly to effect change.

Constructs comprising "student agency"
- Identify
- A sense of purpose
- Growth mind set
- Motivation
- Self-efficacy
- Trust
- Learning to learn
- etc.

Implications for curriculum
How do countries embed "student agency" in their curriculum? And to what extent?

Panel A: Percentage of content items in the overall mapped curricula targeting student agency (as main or sub target), and distribution by learning area
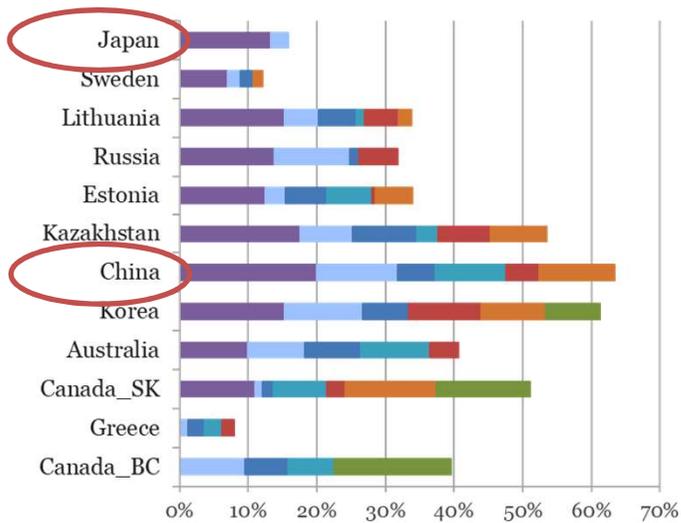
Panel B: Distribution of content items in the mapped curricula targeting student agency (as main or sub target), by learning area
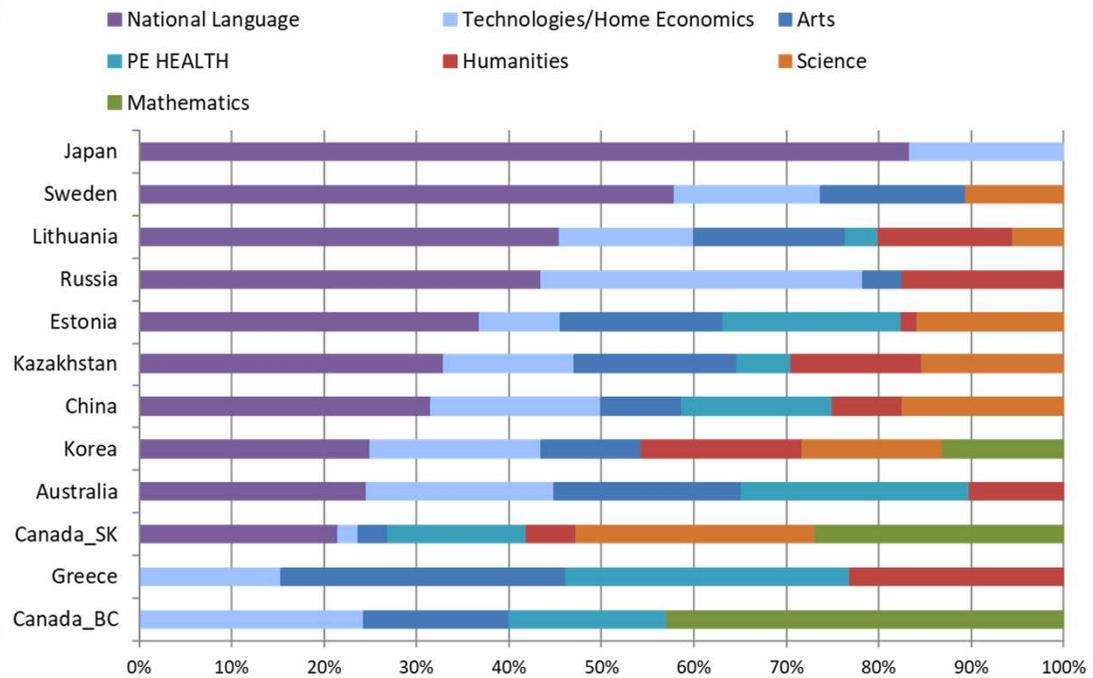
Source: preliminary findings from the OECD e2030 CCM main study

Constructs of "student agency" relates to student performance
Countries where students have stronger beliefs in their abilities perform better in mathematics
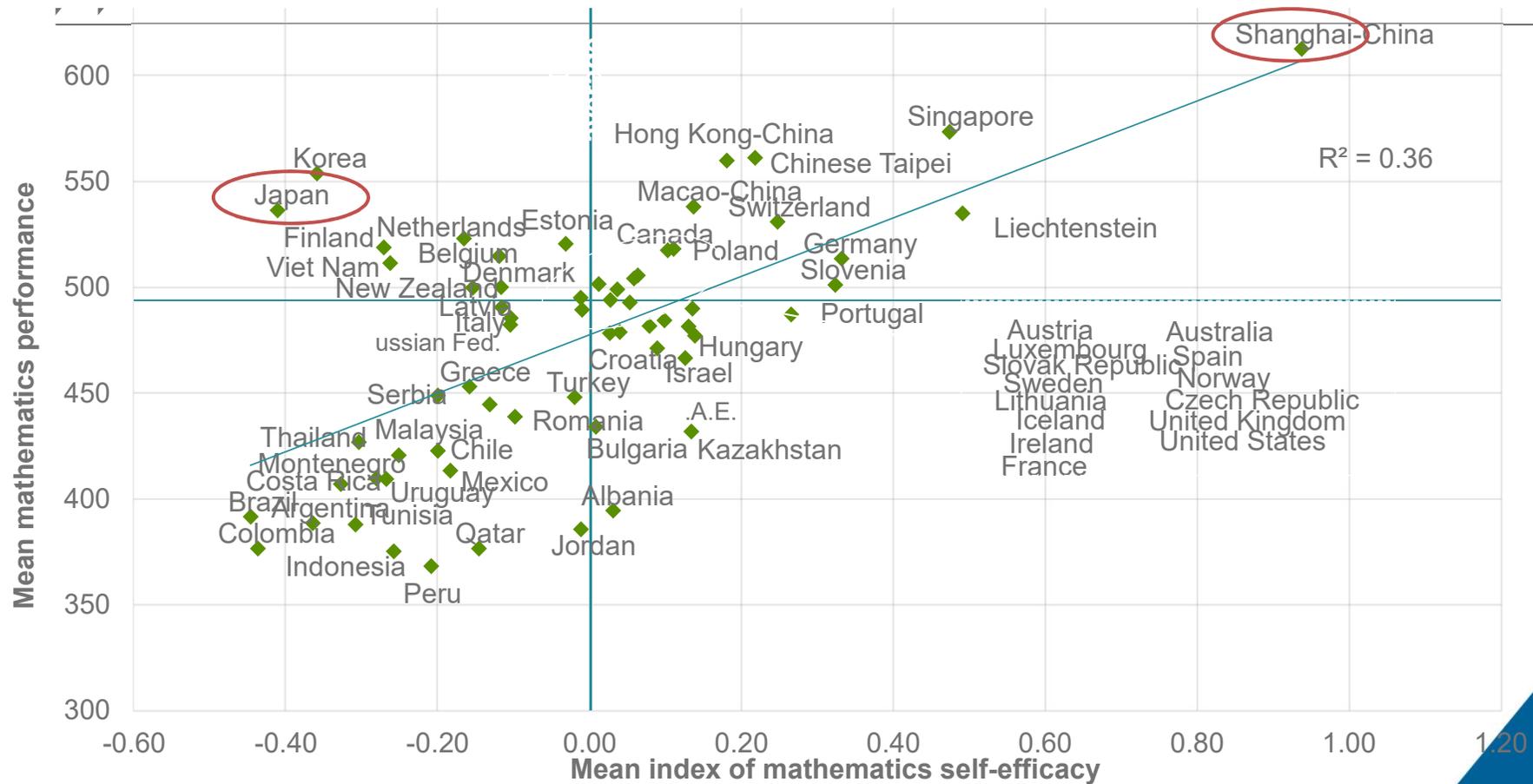
Teachers do not always feel prepared to engage students or offer enhanced learning activities

Percentage of teachers who feel they can do the following "quite a bit" or "a lot"

■ OECD average-31
  Japan

%

0 10 20 30 40 50 60 70 80 90 100

Make my expectations about student behaviour clear
Get students to follow classroom rules
Control disruptive behaviour in the classroom
Calm a student who is disruptive or noisy

Classroom management

Provide an alternative explanation
Craft good questions for students
Vary instructional strategies in my classroom
Use a variety of assessment strategies

Instruction

Get students to believe they can do well in school work
Help students value learning
Help students think critically
Motivate students who show low interest in school work

Student engagement

Support student learning through the use of ICT

Enhanced activities

Learning Compass: Competencies

- Knowledge
- Skills
- Attitudes and values

Learning compass: Knowledge
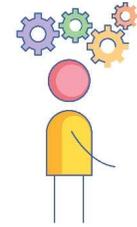
- Disciplinary

- Interdisciplinary

- Epistemic

- Procedural

Memorisation is **less useful** as problems become **more difficult** *(OECD average)*
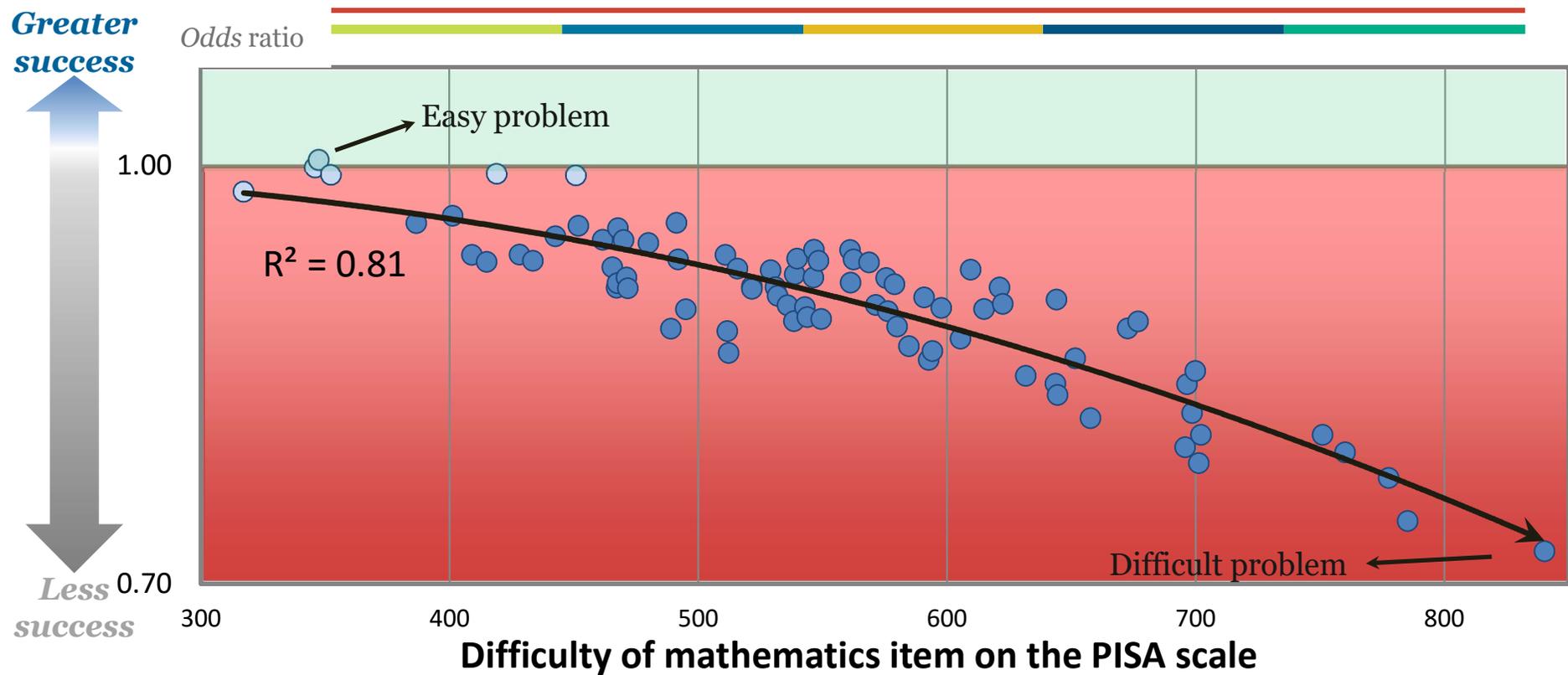
Source: Figure 4.3

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

Greater success

1.50

R² = 0.82

Odds ratio

Difficult problem

Easy problem

Less success

0.80

300   400   500   600   700   800

Difficulty of mathematics item on the PISA scale
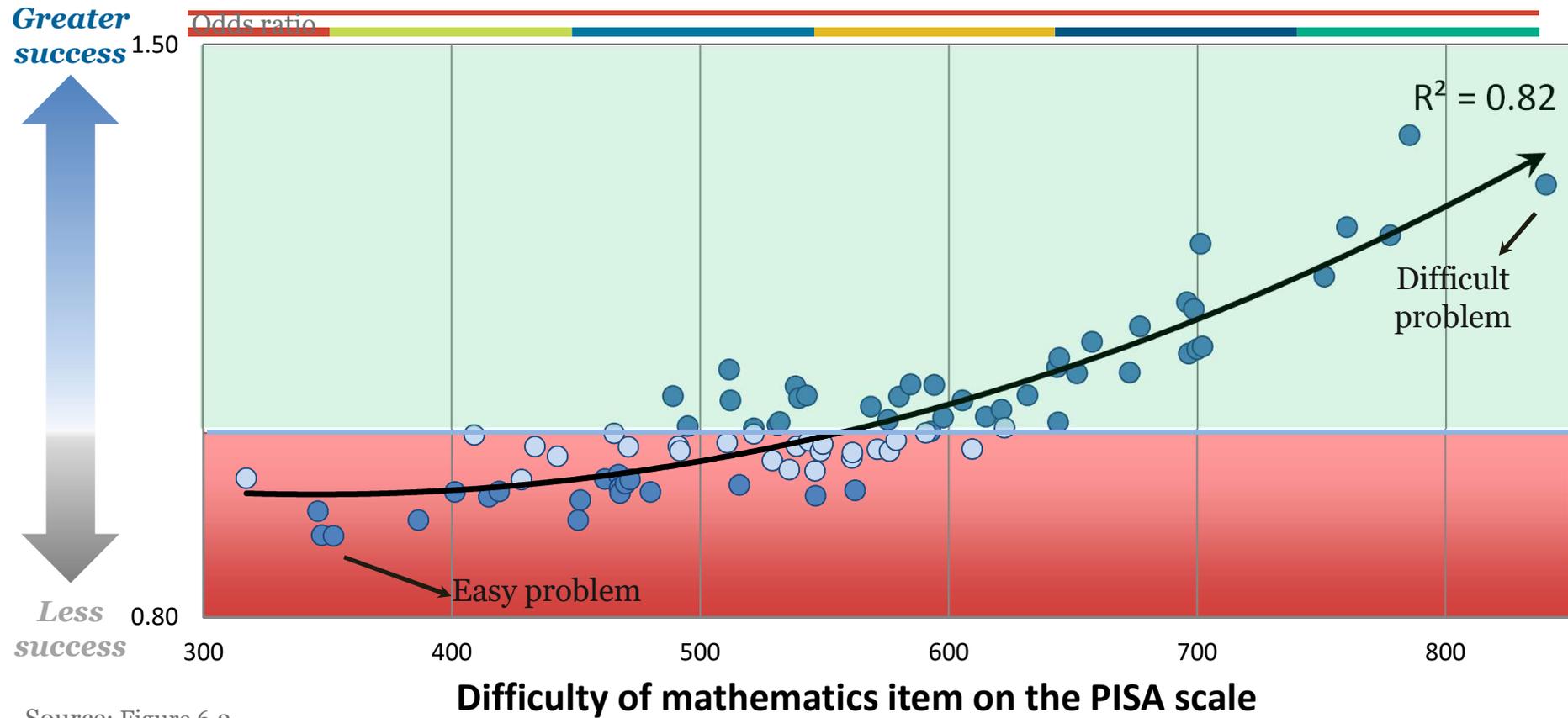
Source: Figure 6.2

Students' use of **elaboration strategies**

More

Elaboration

Less

| Below the OECD average | At the same level as the OECD average | Above the OECD average |

% of students who understand new concepts by relating them to things they already know

Country	Value
United Kingdom	20
Iceland	18
Australia	20
Ireland	23
France	19
New Zealand	19
Israel	26
Canada	26
Austria	32
Japan	29
Belgium	22
Singapore	31
Uruguay	22
Germany	33
Netherlands	24
HK-China	30
Luxembourg	33
Costa Rica	33
Norway	23
Finland	23
United States	30
Portugal	29
OECD average	30
Denmark	23
Indonesia	38
Switzerland	32
Bulgaria	27
Macao-China	32
Chile	24
Albania	33
Sweden	24
Kazakhstan	29
Greece	35
UAE	32
Hungary	37
Brazil	25
Argentina	35
Liechtenstein	41
Estonia	38
Mexico	27
Spain	39
Turkey	28
Shanghai-China	35
Poland	27
Colombia	33
Korea	43
Latvia	32
Czech Republic	40
Viet Nam	41
Croatia	48
Slovenia	56
Romania	36
Russian Fed.	41
Montenegro	39
Malaysia	38
Peru	30
Italy	46
Serbia	50
Slovak Republic	40
Lithuania	30
Thailand	34
Qatar	34
Chinese Taipei	42
Jordan	44
Tunisia	44

Source: Figure 6.1

Learning compass: Skills
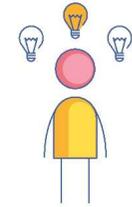
- Cognitive & meta-cognitive

- Social & emotional

- Physical & practical

Influence of students' environment – Classroom climate

Cooperative classroom climate is positively related to SE skills
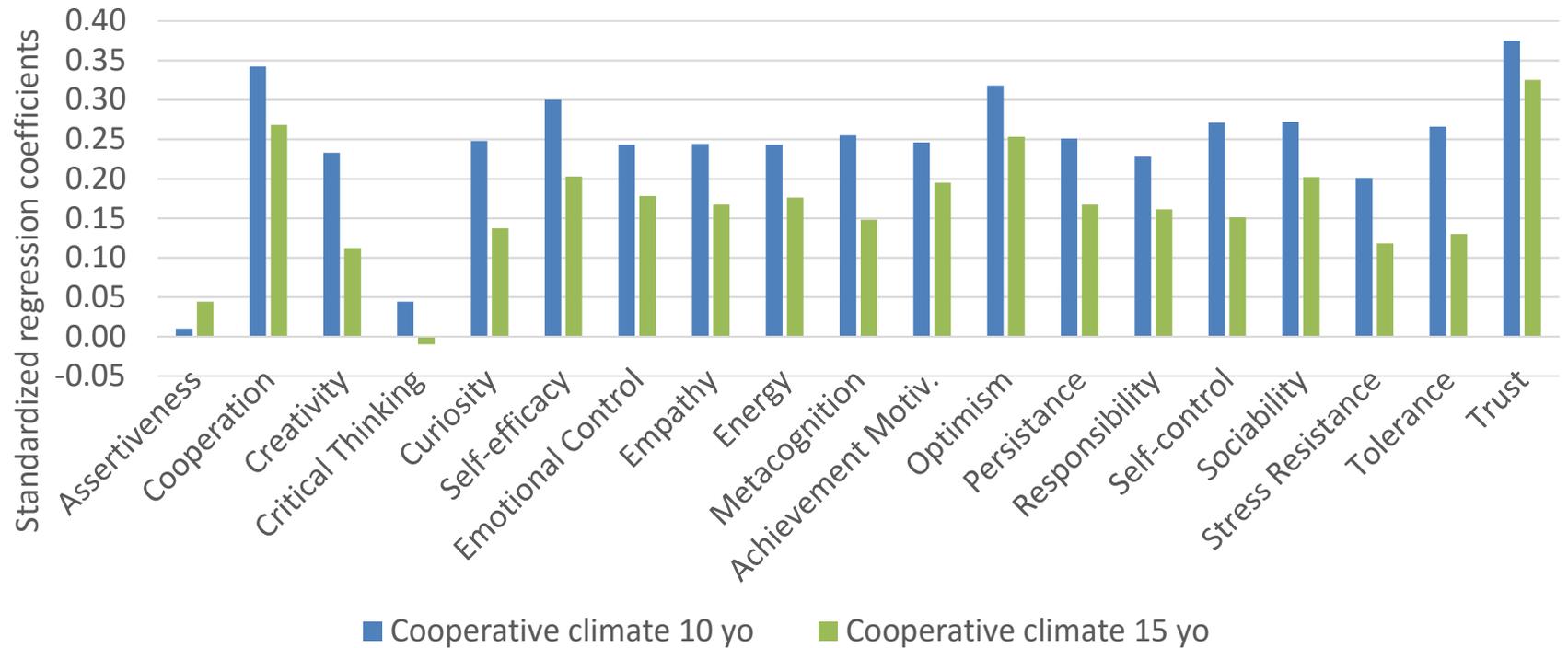
Influence of students' environment – School bullying

School bullying is negatively related to students' SE skills

Bar chart showing standardized regression coefficients for Bullying 10 yo (blue) and Bullying 15 yo (green) across SE skills: Assertiveness, Cooperation, Creativity, Critical Thinking, Curiosity, Self-efficacy, Emotional Control, Empathy, Energy, Metacognition, Achievement Motiv., Optimism, Persistance, Responsibility, Self-control, Sociability, Stress Resistance, Tolerance, Trust.

■ Bullying 10 yo ■ Bullying 15 yo

Importance of SE skills – Better focus, harder to distract

Trouble focusing is related to social and emotional skills
(based on student, parent and teacher reports – older cohort)
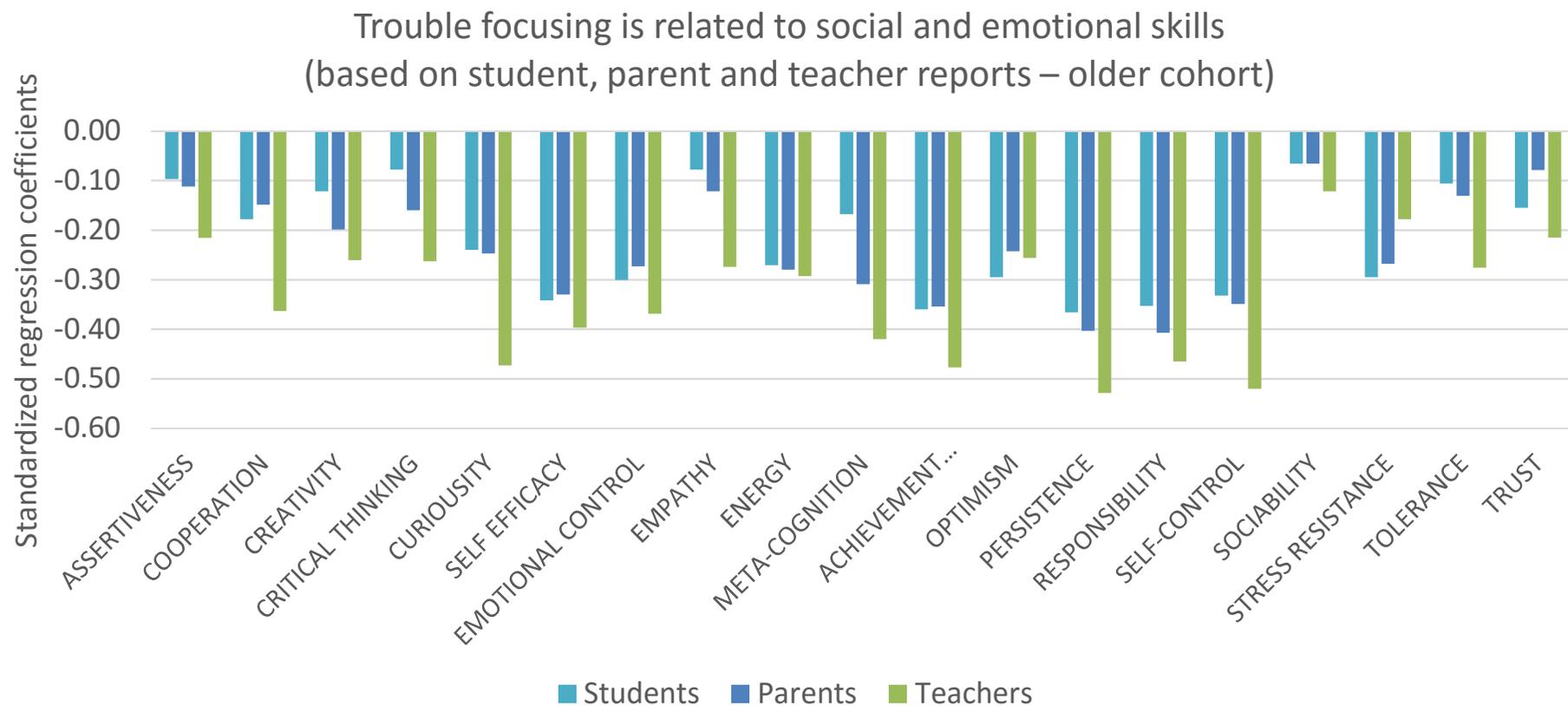
Importance of SE skills – Closer social networks

SE skills are positively associated with students' feeling of closeness to their family

- Closeness family 10 yo
- Closeness family 15 yo
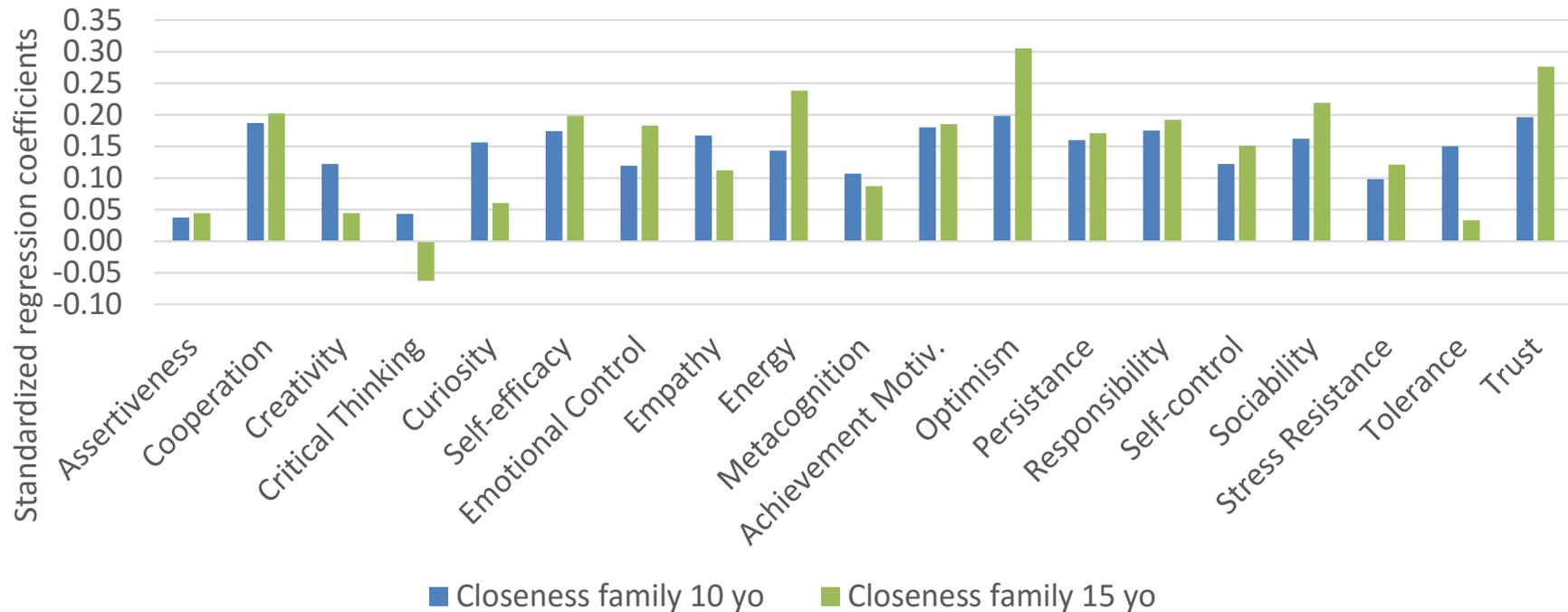
Importance of SE skills – Higher academic aspirations

Students' SE skills are positively related to their academic aspiration

Standardized regression coefficients

Categories (x-axis): Assertiveness, Cooperation, Creativity, Critical Thinking, Curiosity, Self-efficacy, Emotional Control, Empathy, Energy, Metacognition, Achievement Motiv., Optimism, Persistance, Responsibility, Self-control, Sociability, Stress Resistance, Tolerance, Trust

■ Academic aspiration 10 yo   ■ Academic aspiration 15 yo
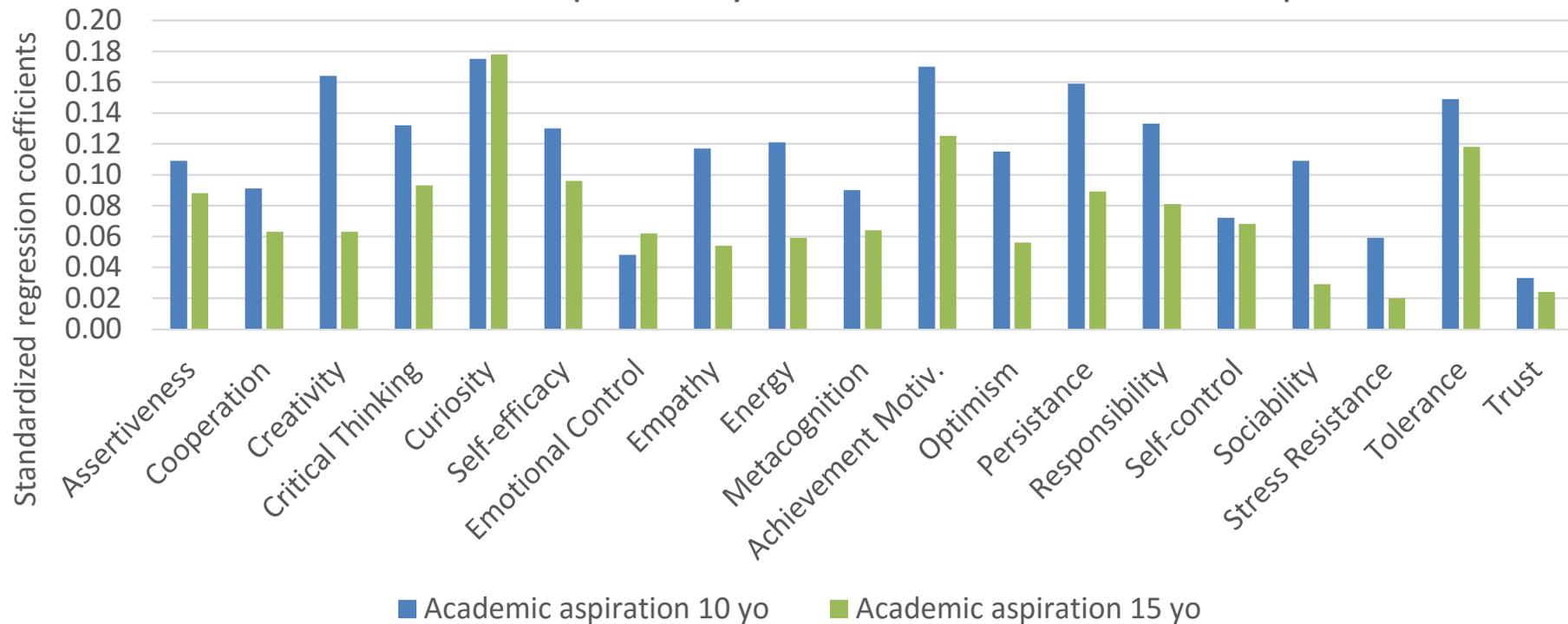
Importance of SE skills – Higher entrepreneurship

Students' SE skills are positively associated with their entrepreneurship
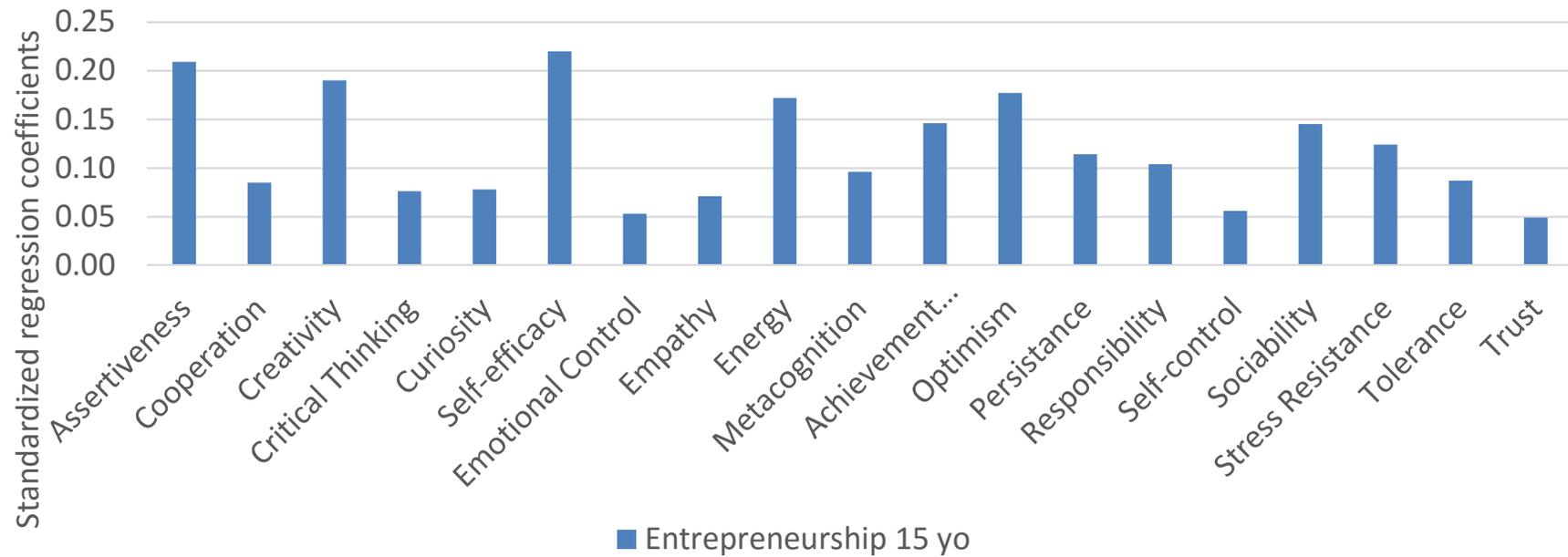
To a large extent, **socio-emotional skills (self-regulation, cooperation, resilience, and empathy)** are found in physical education, humanities, technologies/home economics, arts and national language. To a much lesser extent, in science and math.

Panel A: Percentage of content items in the overall mapped curricula targeting each competency/construct *(as main target),* **and distribution by learning area**
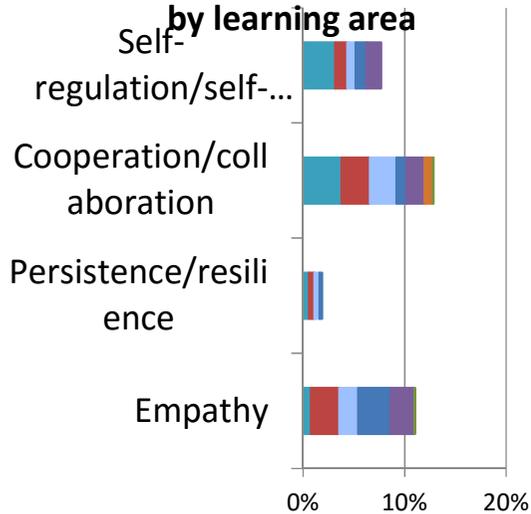
Panel B: Distribution of content items in the mapped curricula targeting each competency/construct *(as main target),* **by learning area**

Legend:
- PE HEALTH
- Humanities
- Technologies/Home Economics
- Arts
- National Language
- Science

Panel B values:

Competency/construct	PE HEALTH	Humanities	Technologies/Home Economics	Arts	National Language
Self-regulation/self-control	41%				19%
Cooperation/collaboration	29%	22%	20%		
Persistence/resilience	31%	28%	28%		
Empathy		25%		29%	21%
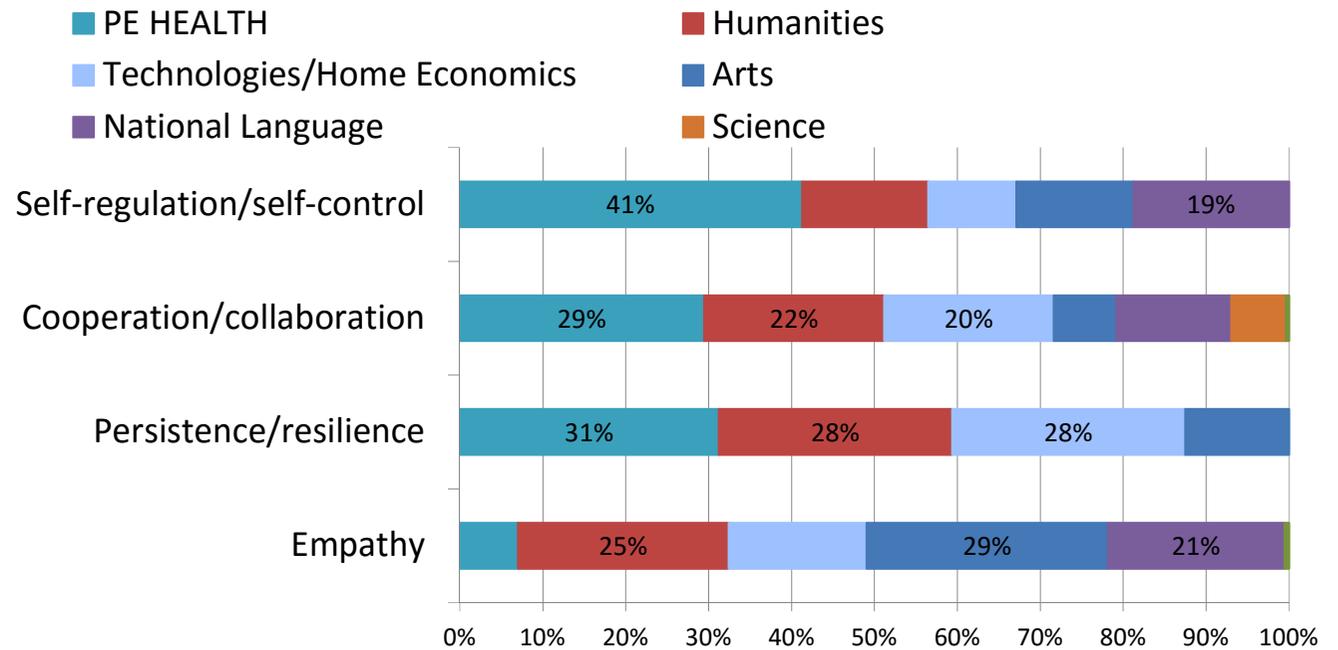
Source: preliminary findings from the OECD e2030 CCM field study

Brain sensitivity of important developmental areas
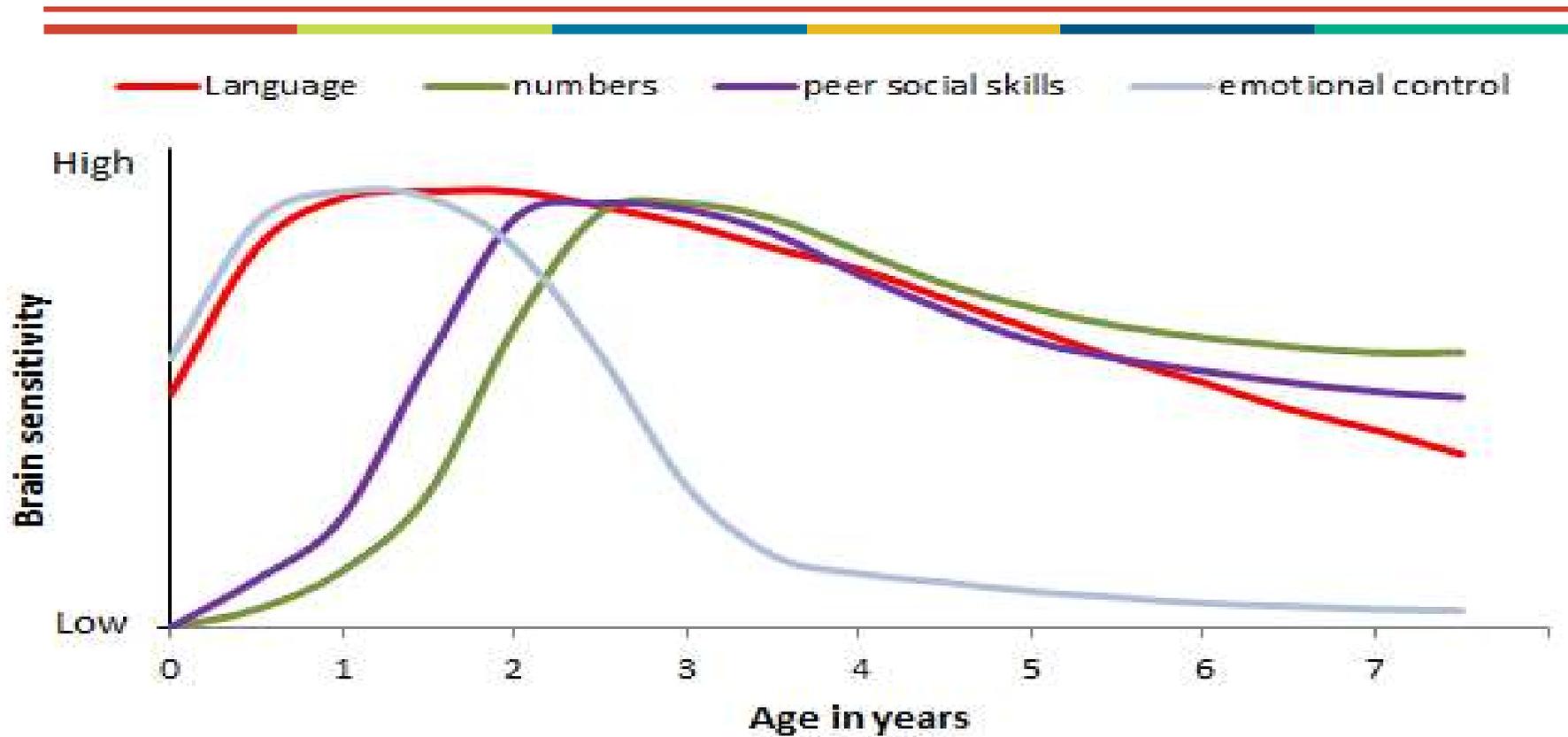
Transformative competencies

- Creating new value

- Taking responsibility

- Reconciling tensions & dilemmas

Learning compass: Attitudes and values
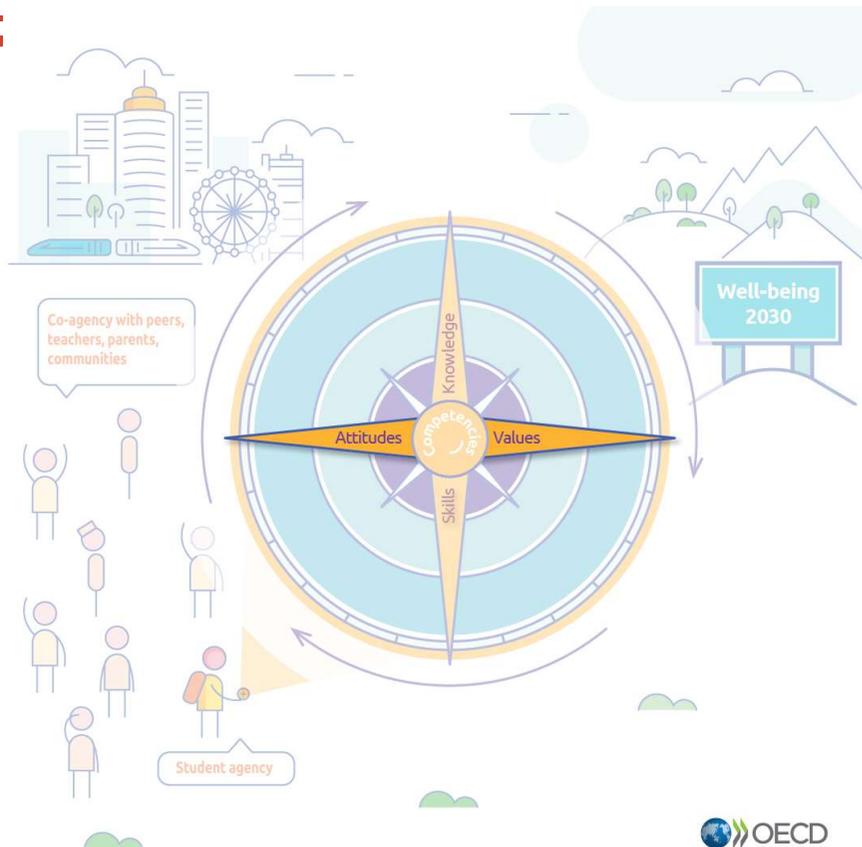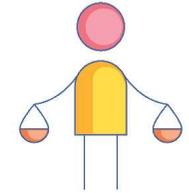
- Personal
- Local
- Societal
- Global

Implications for pedagogy
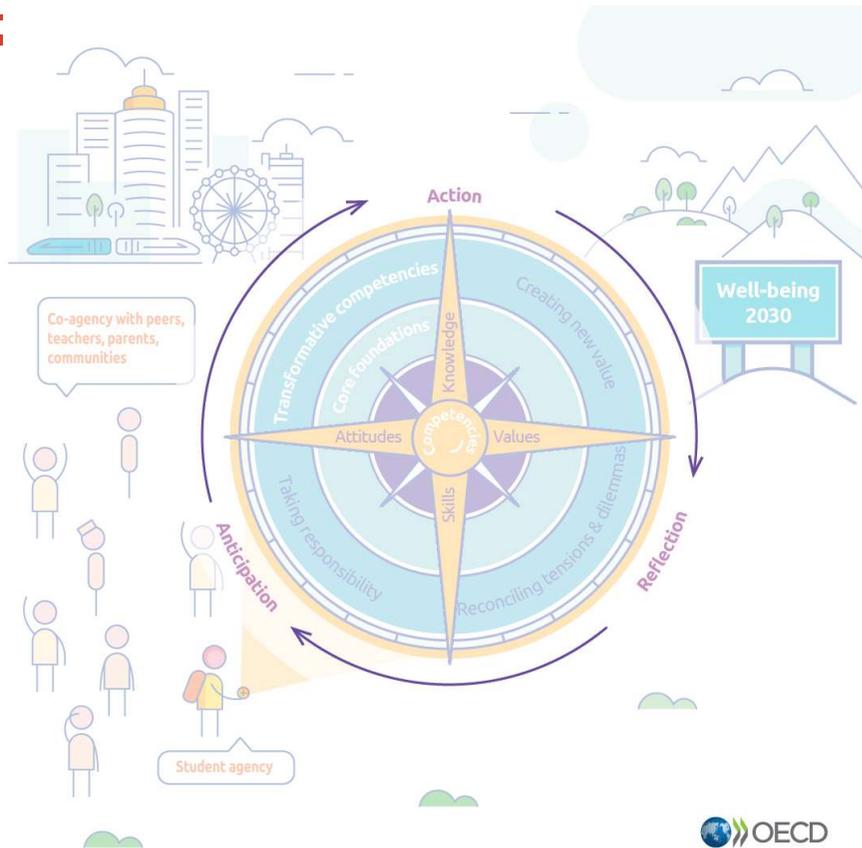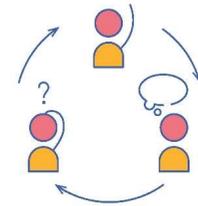
- Anticipation

- Action

- Reflection

Some lessons

- Rigor, focus and coherence
- Remain true to the disciplines
  - but aim at interdisciplinary learning and the capacity of students to see problems through multiple lenses
  - Balance knowledge of disciplines and knowledge about disciplines
- Focus on areas with the highest transfer value
  - Requiring a theory of action for how this transfer value occurs
- Authenticity
  - Thematic, problem-based, project-based, co-creation in conversation
- Some things are caught not taught
  - Immersive learning propositions

Professionalism

- 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
- Acceptance of professional responsibility in the name of the profession and accountability towards the profession

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 professional collaboration

Percentage of lower secondary teachers who report doing the following activities at least once per month
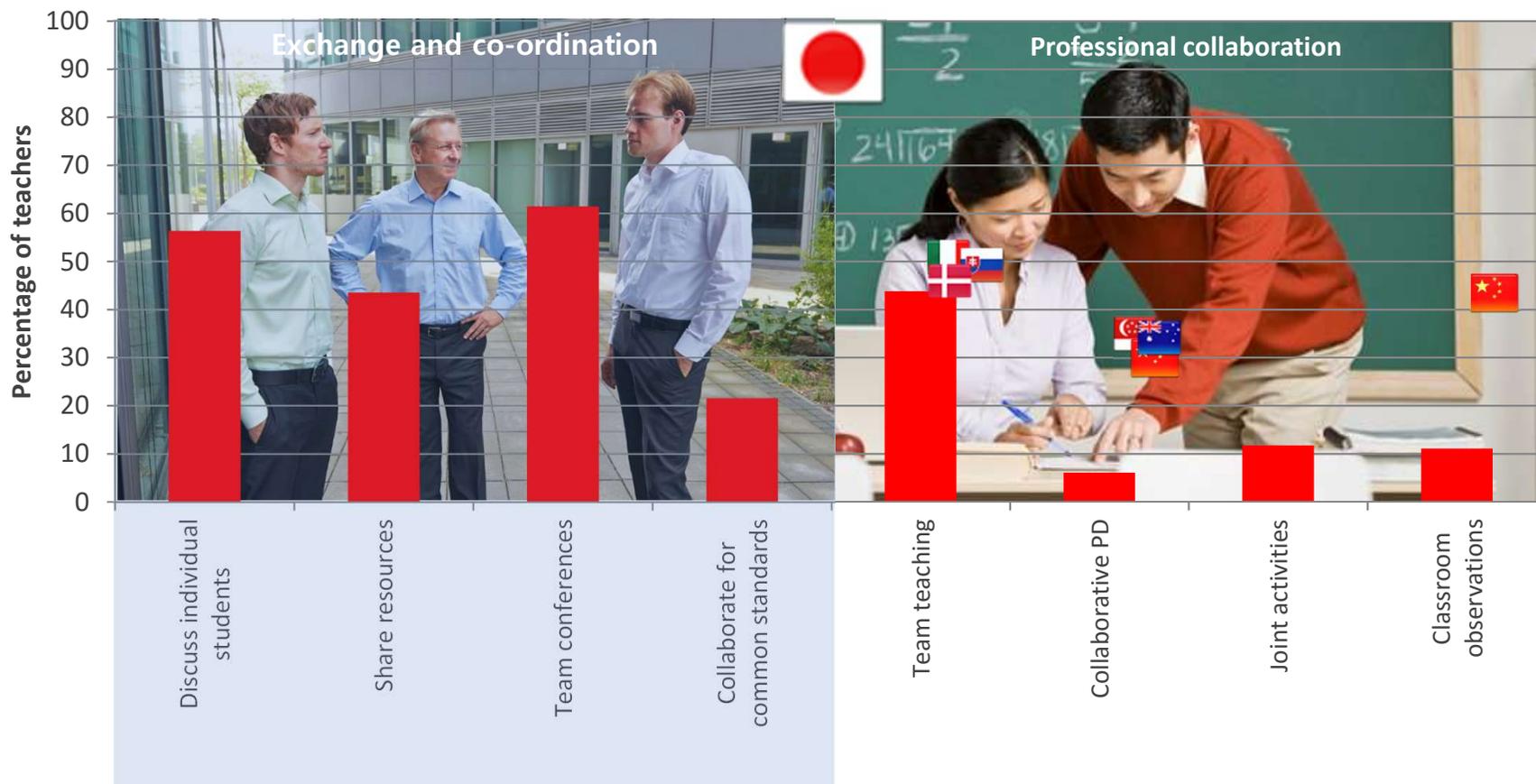
Teachers' self-efficacy and professional collaboration
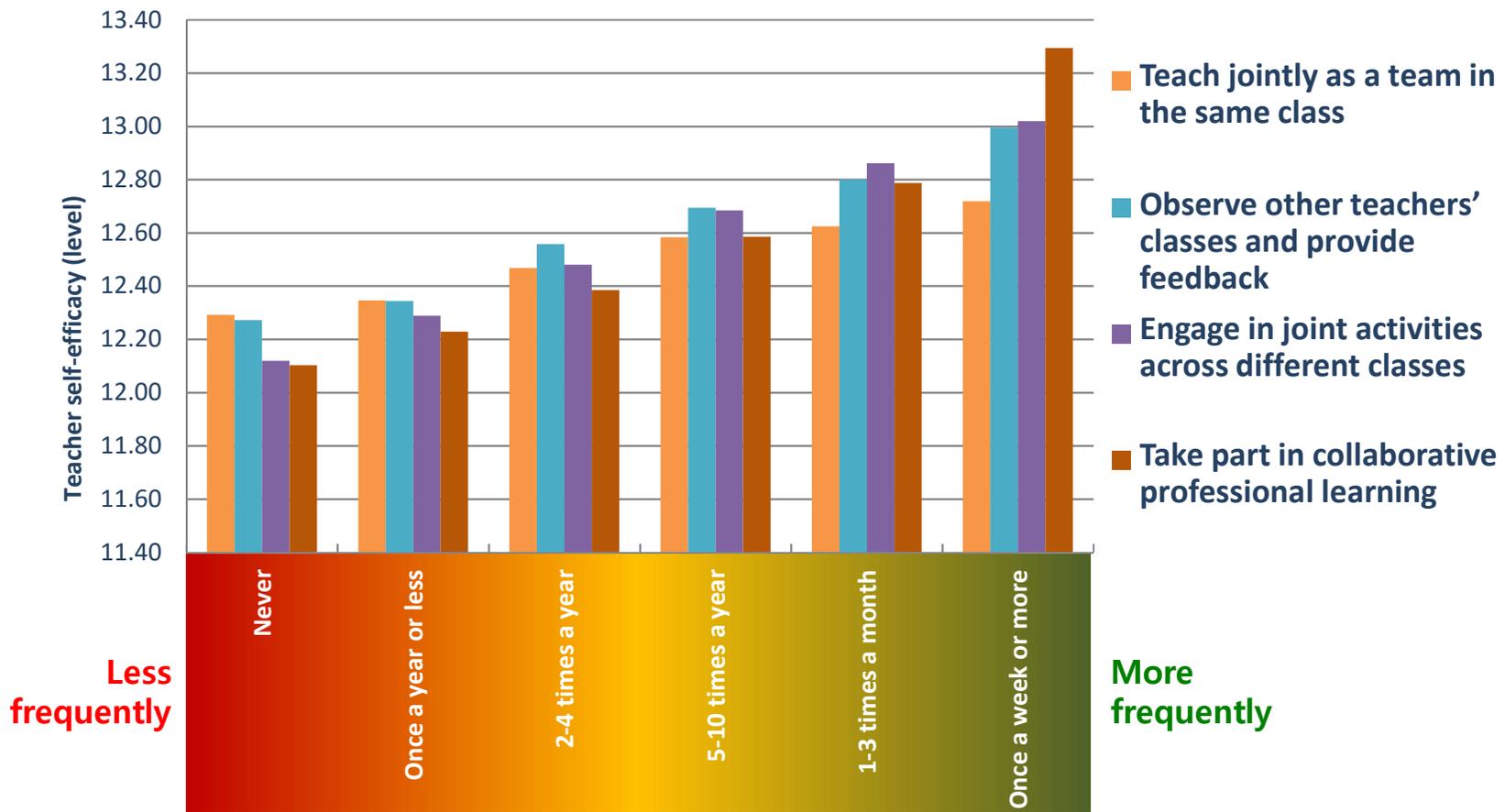
Teacher job satisfaction and professionalism

Legend:
- Low professionalism (red)
- High professionalism (green)

Categories:
- Perceptions of teachers' status
- **Satisfaction with the profession**
- **Satisfaction with the work environment**
- Teachers' self-efficacy
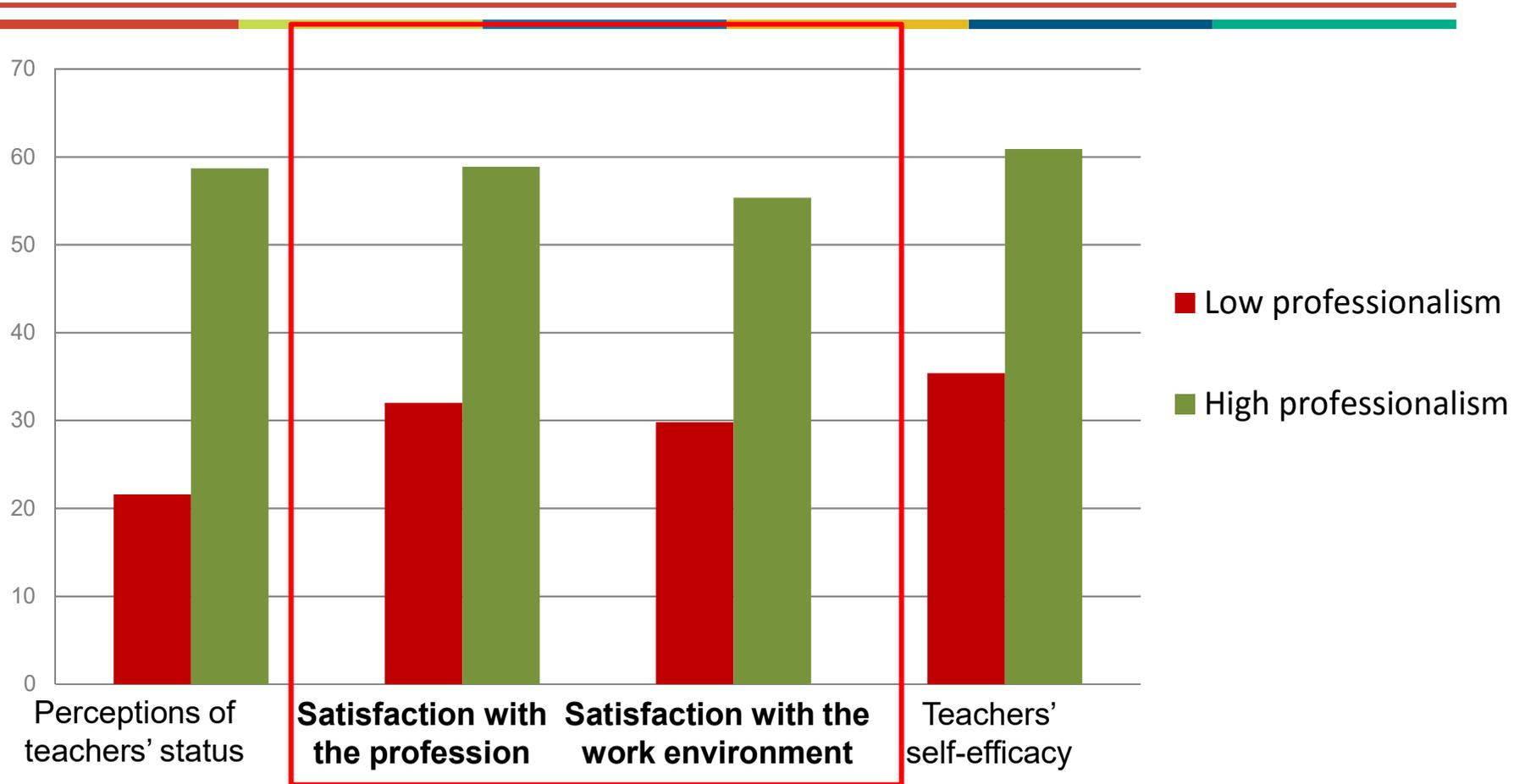
Who decides?

Percentage of decisions taken at each level of government in public lower secondary education (2017)

Legend: ■ School ■ Local ■ Regional or Sub-regional ■ Central or State ■ Multiple levels
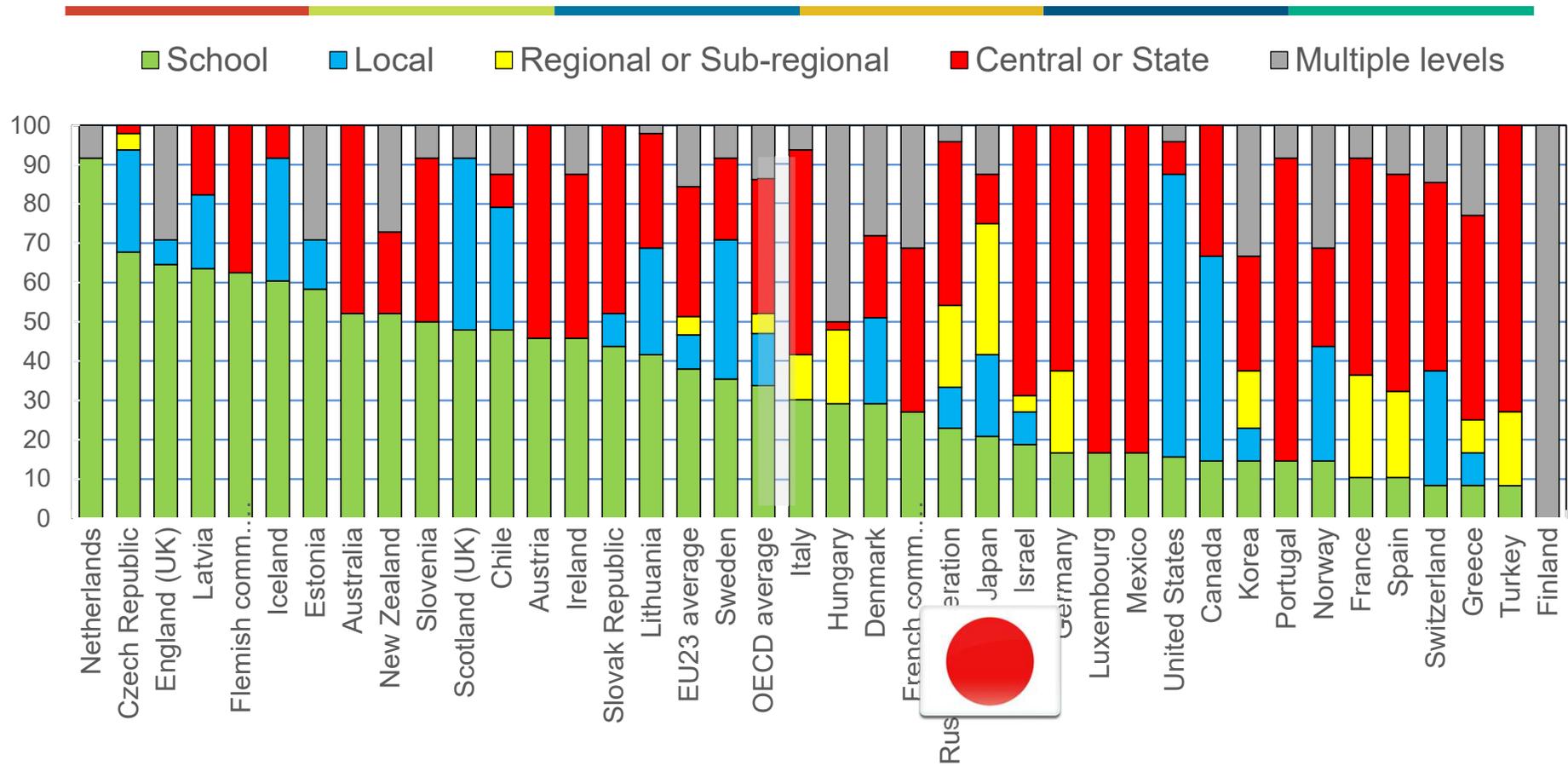
Correlations between the responsibilities for school governance and learning outcomes

Higher science

Lower science performance

| School principal | Teachers | School governing board | Local or regional education authority | National education authority |
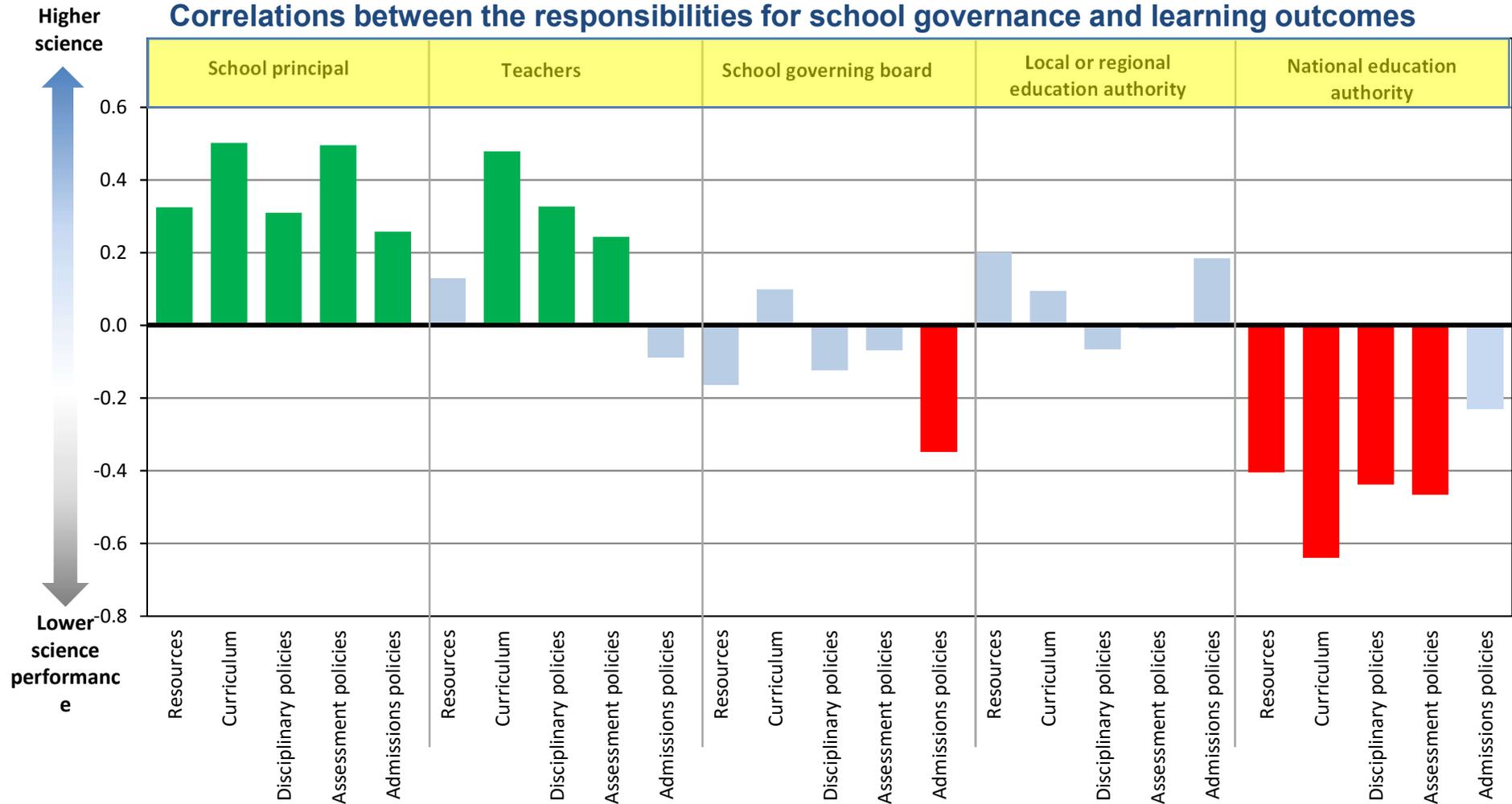
Source: OECD, PISA 2015 Database.

PISA Figure II.4.8

Learning, unlearning and relearning

Move to a **new model** for skills development

From:

| Primary and secondary education | Tertiary: specialise | Job: Same sector | Retire and pension |

age

To:

| ECEC | Primary and secondary education | Tertiary: transversal | Job | Job | Job | Job | Job |
| | | | | Job | | Job | |

Adult upskilling and reskilling

age

OECD
BETTER POLICIES FOR BETTER LIVES
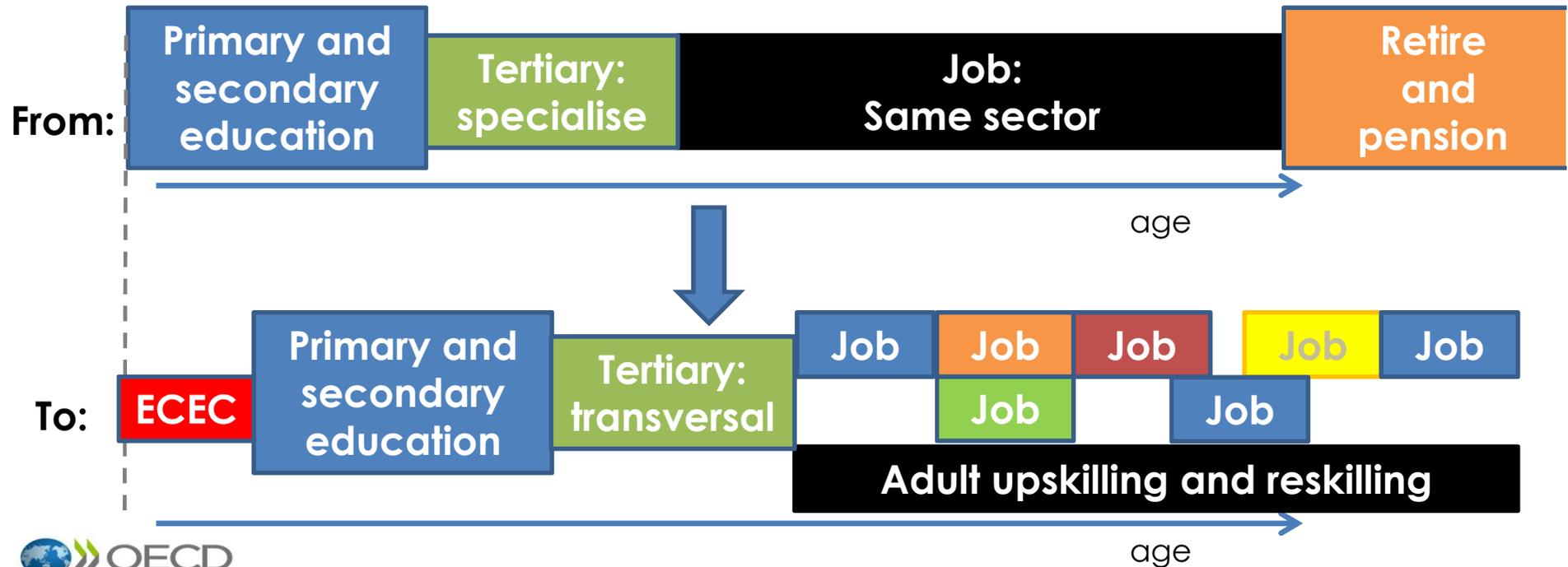
A **range of policies** is needed to make the most out of the digital transformation

Education policies
to develop the right skills and better harness potential of technology

Labour market policies
to ensure flexibility and adaptability

Industry policies
to foster competitiveness & adopt digital innovations

Housing & transport policies
to ensure mobility of workers

Innovation policies
to adopt and invent of new technologies

Migration policies
to influence supply of skills and support knowledge spillovers

Tax policies
creating incentives for employees and employers to invest in skills

Social policies
ensure social protection for non-standard work contracts & unemployed

What does the "learning compass 2030" look like in real classrooms?

The OECD E2030 School Network Focus Group are collecting video narratives to show that the Learning Compass 2030 is **"actionable".**

Thank you

Find out more about our work at www.oecd.org/pisa

- **All publications**
- **The complete micro-level database**

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Twitter: **SchleicherOECD**

Wechat: **AndreasSchleicher**

and remember:

Without data, you are just another person with an opinion