ASEM LLL FORUM 2016

EDUCATION 2030

REDEFINING OECD KEY COMPETENCIES

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Reflection on Day 1:
by Prof. Jorgen Orstrom Moller "**asking questions**"

2 of the 3 questions set out on the cover page of the Conference brochure

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Defining 21ˢᵗ century skills:

What are the skills needed for lifelong learning in Europe and Asia in the 21ˢᵗ century?

🔴

Drivers for change:

What drivers for change are creating a revolution of the educational landscape in the 21ˢᵗ century?

Questions about the ASEM questions

- What is the difference between **21ˢᵗ century skills** and **21ˢᵗ century competencies**?

- What are the 21ˢᵗ century skills?

- What about "knowledge"? Don't we need to revisit "**21ˢᵗ century knowledge**"?

- What are **the other aspects** that are important for today & future?

21ˢᵗ century competencies

21ˢᵗ centur...

Cogni...

Meta-cog...

Non-cognitiv...

Soft...

Social and e...

Disp...

Cha...

ICT literacy
Financial literacy
Media literacy
Health literacy
Environmental literacy
ESD (SDG 4.7) & COP 21
OECD PISA 2018
Global Citizenship
Global competency

...ture ...nowledge?

Taxonomy/ terminology – Mess!
Teachers/policymakers get confused!
More & More demands on students
Curriculum Overloads!

OECD questions (Examples)

- How can we **clean up the taxonomy/ mess** so that we can speak **the same language** about 21st century competencies, in order to discuss these issues among different stakeholders within and across countries as well as advance research on 21st century competencies across different fields of research....

Development of the OECD 2030 Learning Framework : Updating the OECD DeSeCo (Definition and Selection of Key Competencies)

- How can **curriculum/ learning standards/ content framework** be redesigned and implemented effectively, in order to ensure that students have sufficient time to **learn deep,** not more....?

- What are **the key aspects (constructs) of competencies** today's students should learn to thrive in as well as shape the future of their world? --- What will remain? What will be new?

International Comparative Analysis on Curriculum

The Economist

INSIDE: A 14-PAGE SPECIAL REPORT ON TECH STARTUPS

If the French ran America
China cracks down on microblogs
New opportunities for organised crime
Regulators go soft on Europe's banks
Google and the internet of things

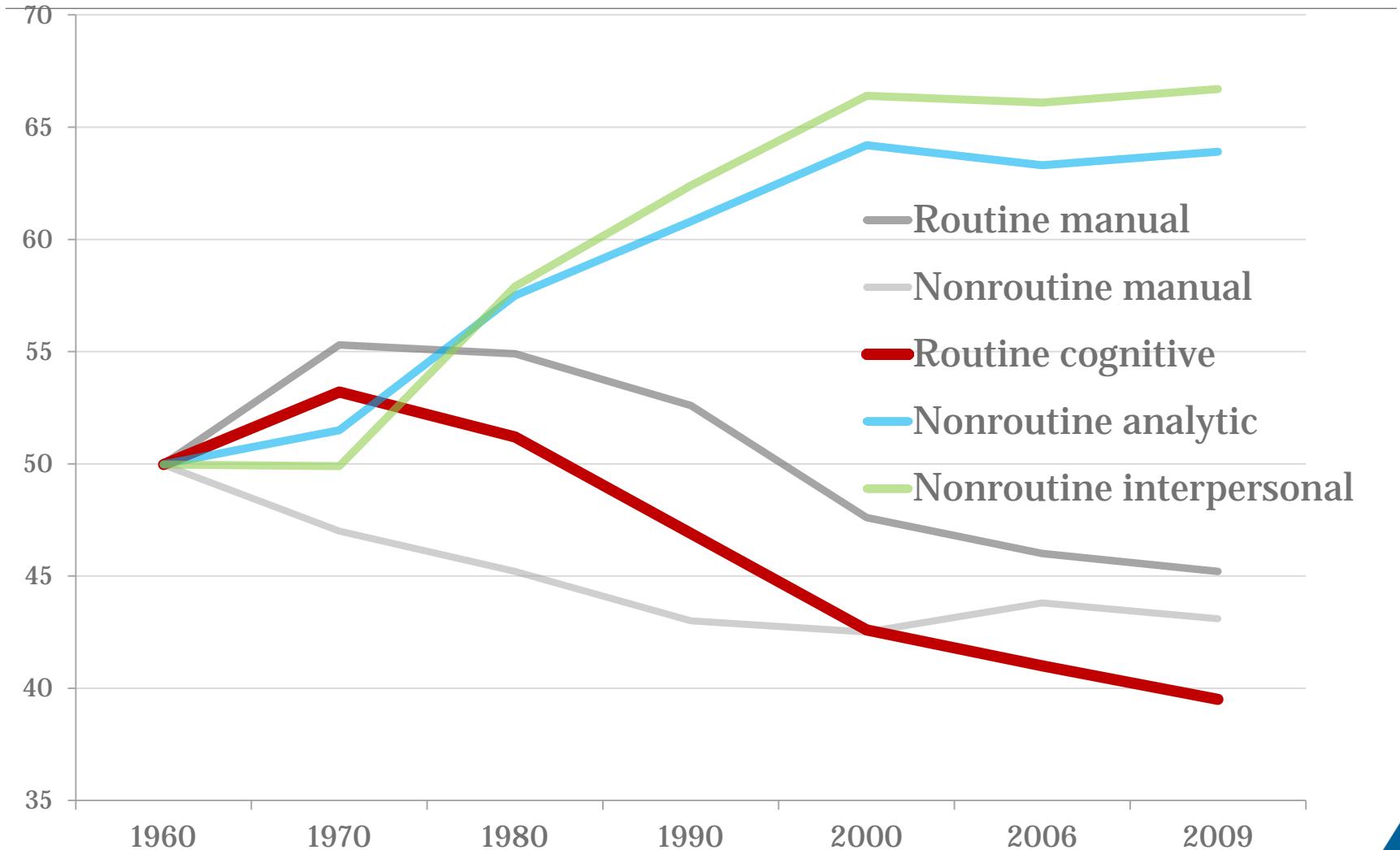JANUARY 18TH–24TH 2014   Economist.com

Coming to an office near you...

What today's technology will do to tomorrow's jobs

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

Changes in the nature of work
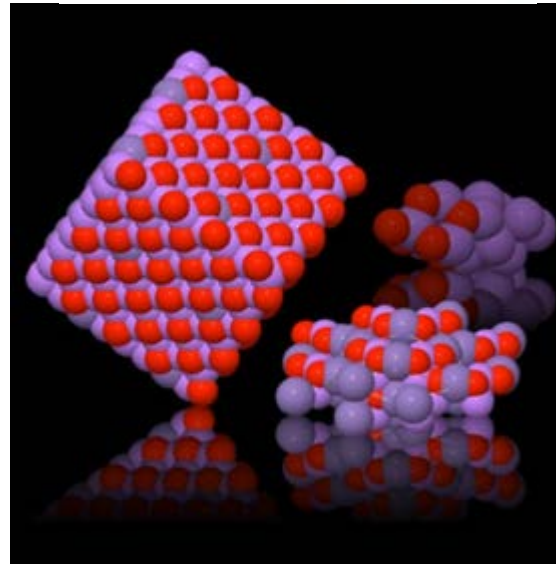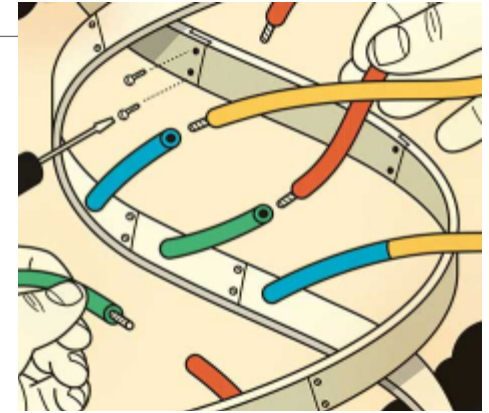## Trends in different tasks in occupations (United States)
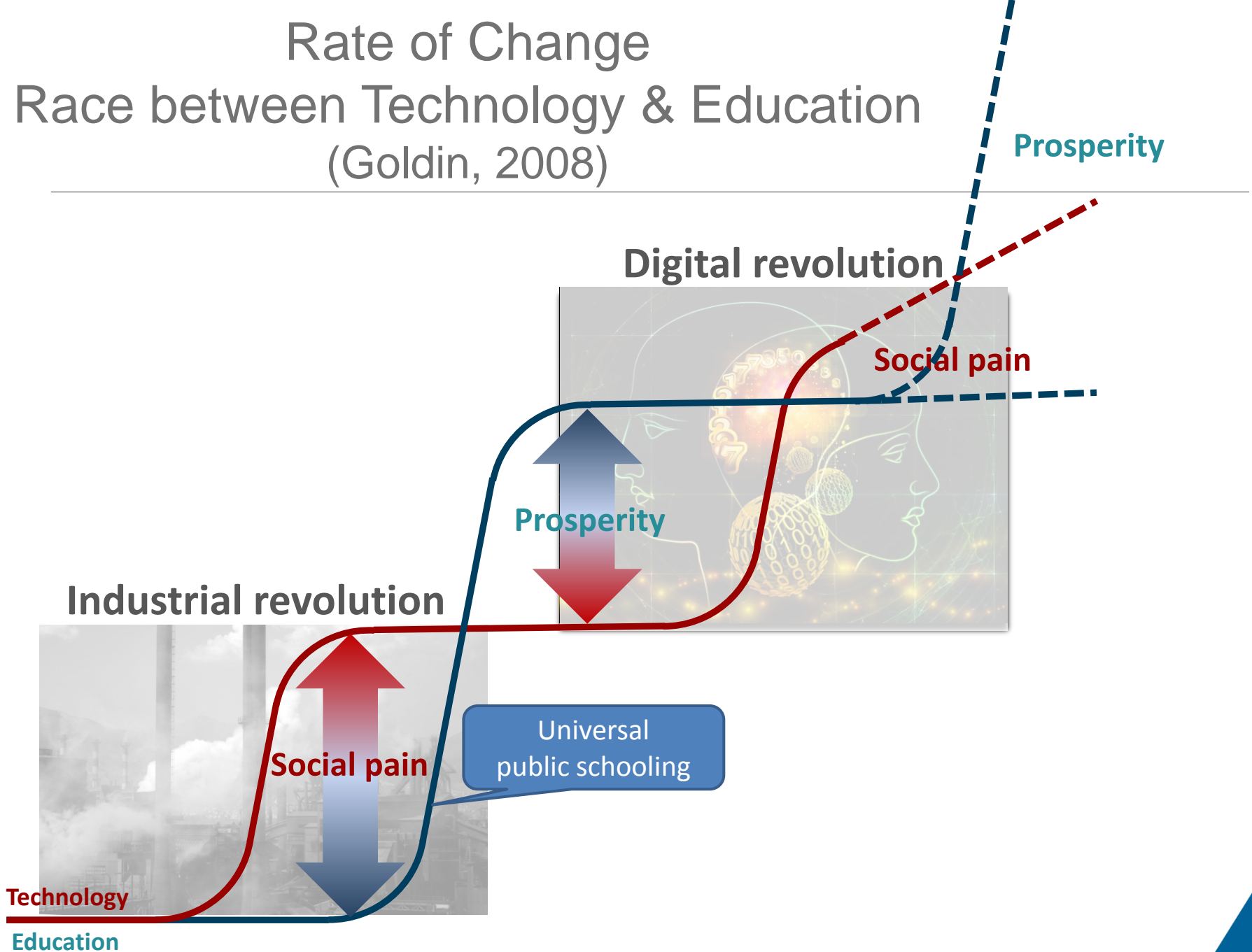
Mean task input in percentiles of 1960 task distribution

Legend:
- Routine manual
- Nonroutine manual
- Routine cognitive
- Nonroutine analytic
- Nonroutine interpersonal

A lot more to come

- Google autonomous cars
- 3D printing
- Synthetic biology
- Brain enhancements
- Nanomaterials
- Etc.

Rate of Change
Race between Technology & Education
(Goldin, 2008)

Key trends in the VUCA world

- **Technology**
- **Migration**
- **Environment**
- **Citizenship**
- **Modern Family**

- **Peace & Security**
- **Health**
- **Employment**
- **Inequality**

What kind of competencies will today's students need in 2030 to find solutions to the complex challenges as well as take the opportunities to shape the future they will live in?

Increasing migration towards the developed world

Net migration (in millions of people) into regions, with countries grouped by income level and OECD members, 1960-2010.
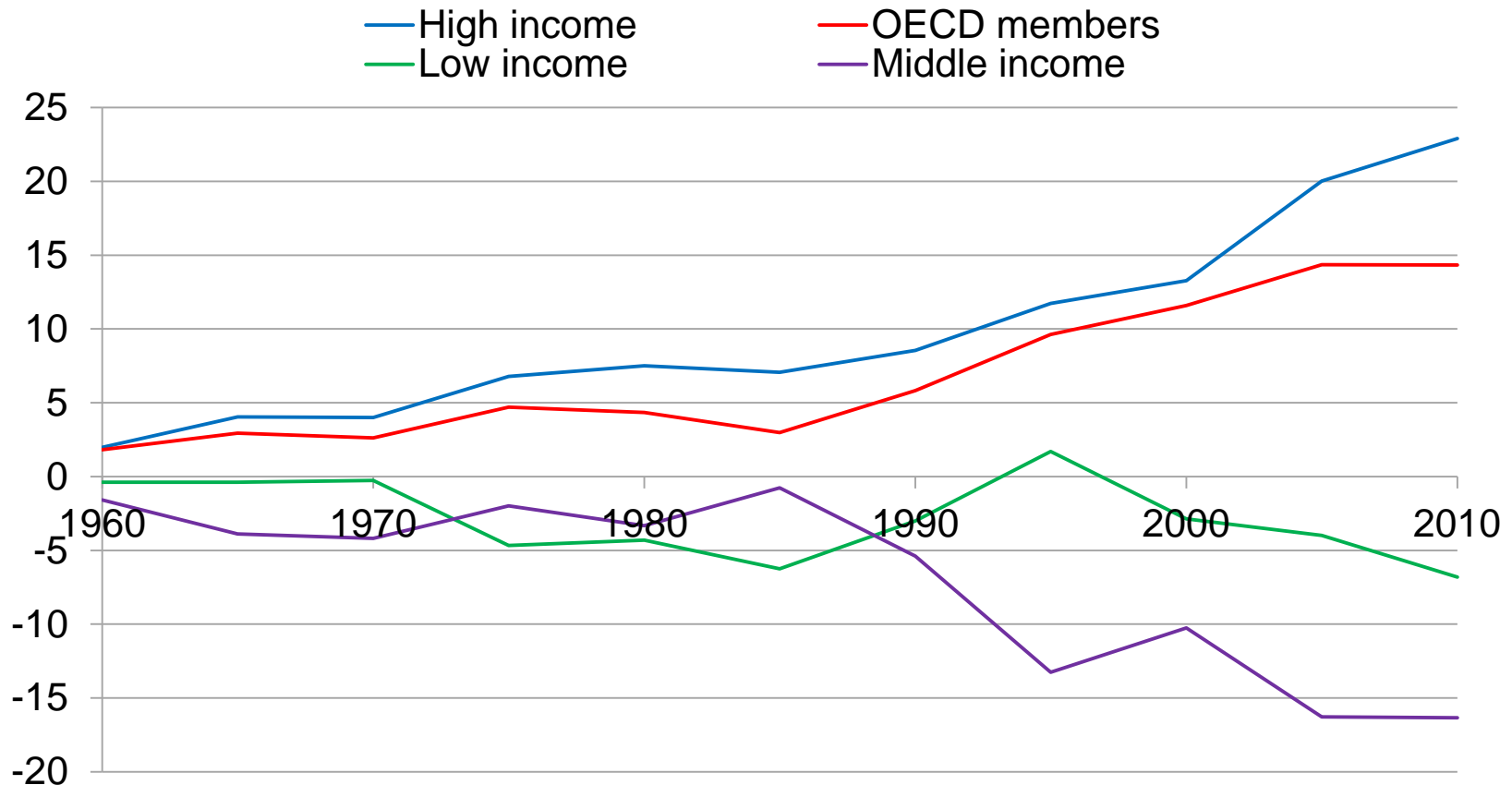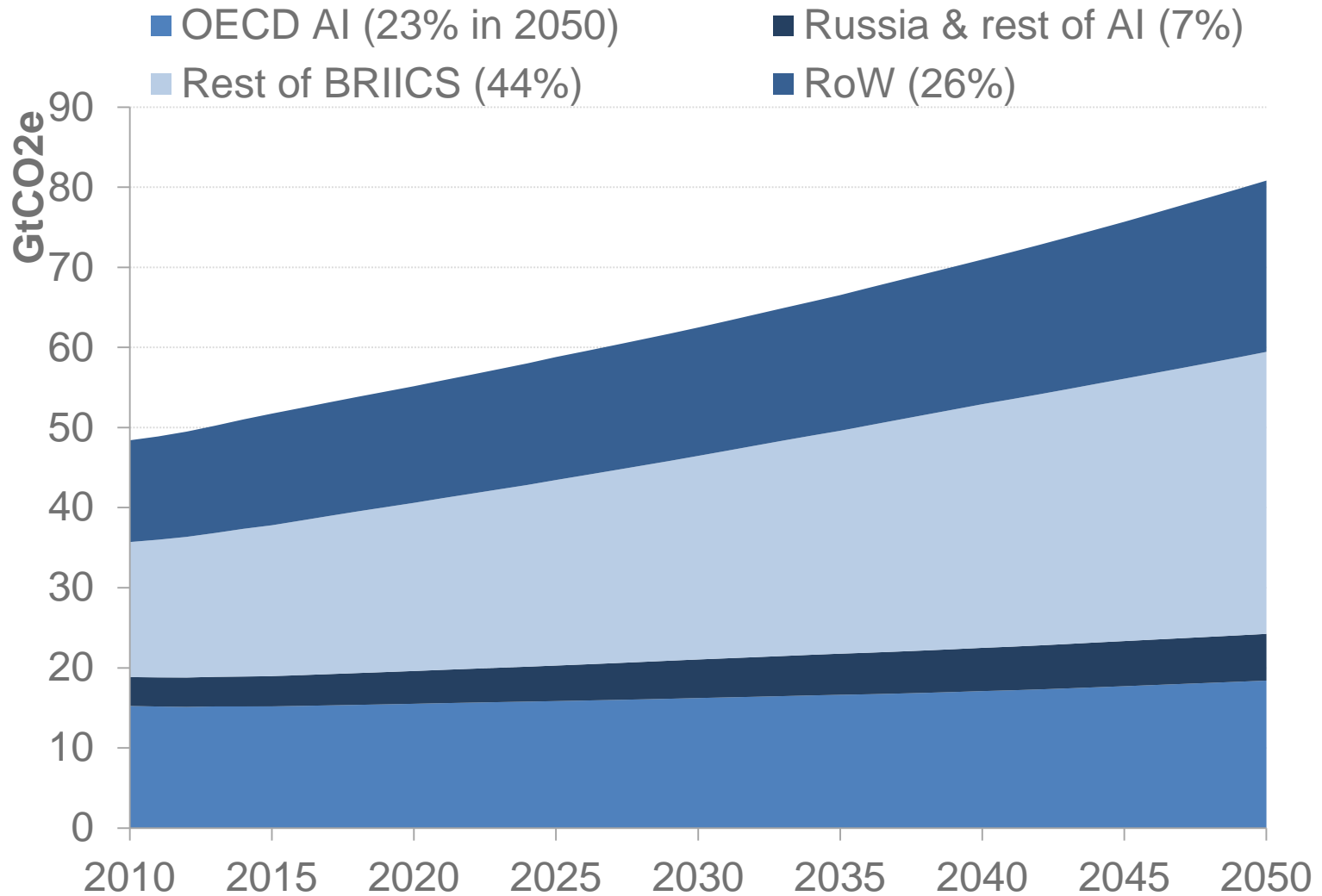

Source : OECD (2013), Trends Shaping Education.
Primary source: World Bank (2012), *World Databank: Net Migration.*

Growing carbon dioxide emissions

CO2 emissions from fuel combustion (million tonnes), 1971-2007

Legend:
- OECD AI (23% in 2050)
- Russia & rest of AI (7%)
- Rest of BRIICS (44%)
- RoW (26%)

Y-axis: GtCO2e

Growing income inequality in many countries

Gini Coefficients for OECD countries, in 1985 and 2008.

Fewer people are engaged in their democracies

Parliamentary voter turnout, in 1950, 1980 and 2010 (or nearest available year)

Aging population across all OECD countries
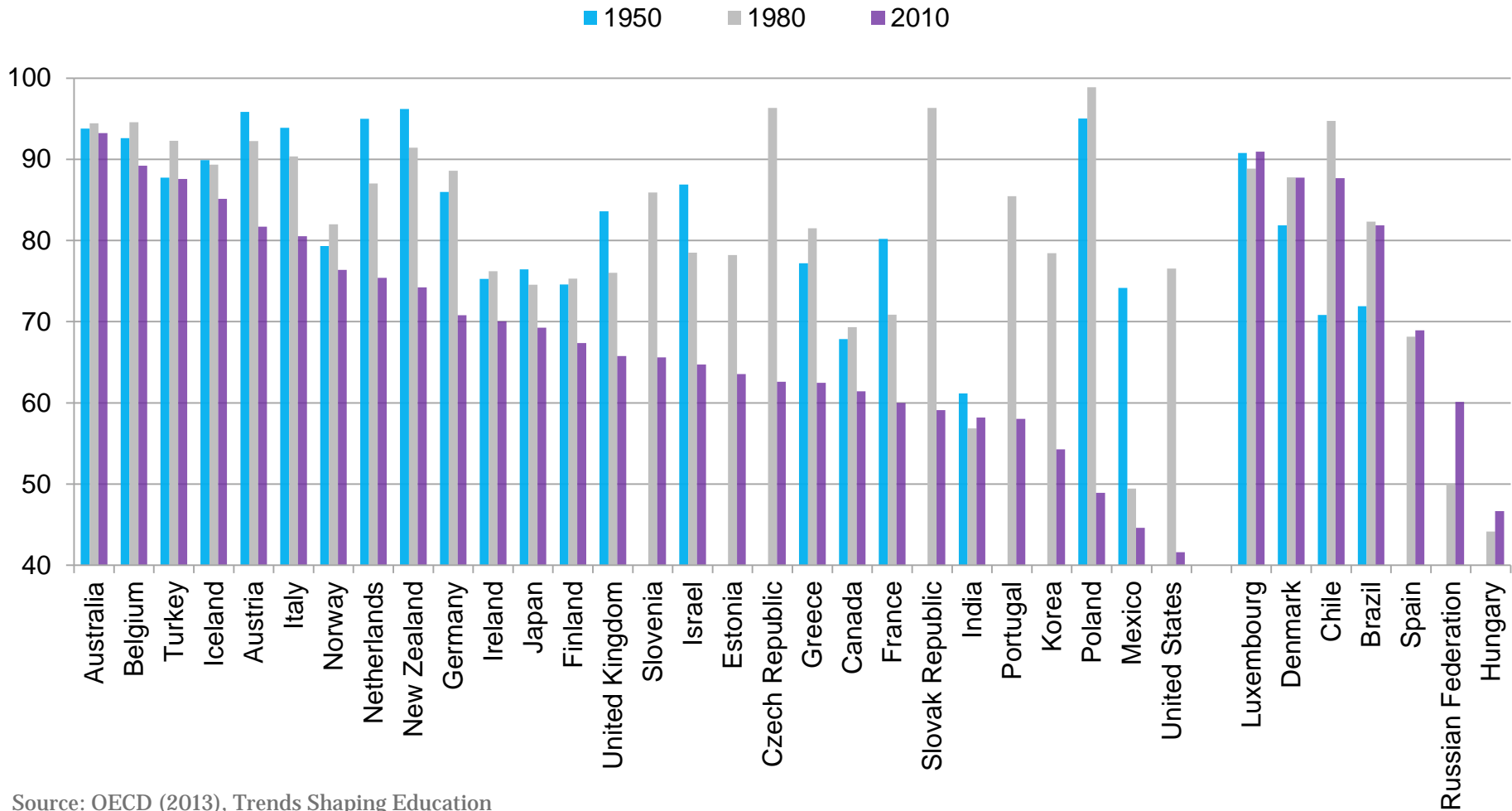
Median age of the population, in 1950, 2010 and 2100

Overweight and obesity among children

Measured overweight (including obesity) among children, 2013 (or latest year)

% of children at various ages
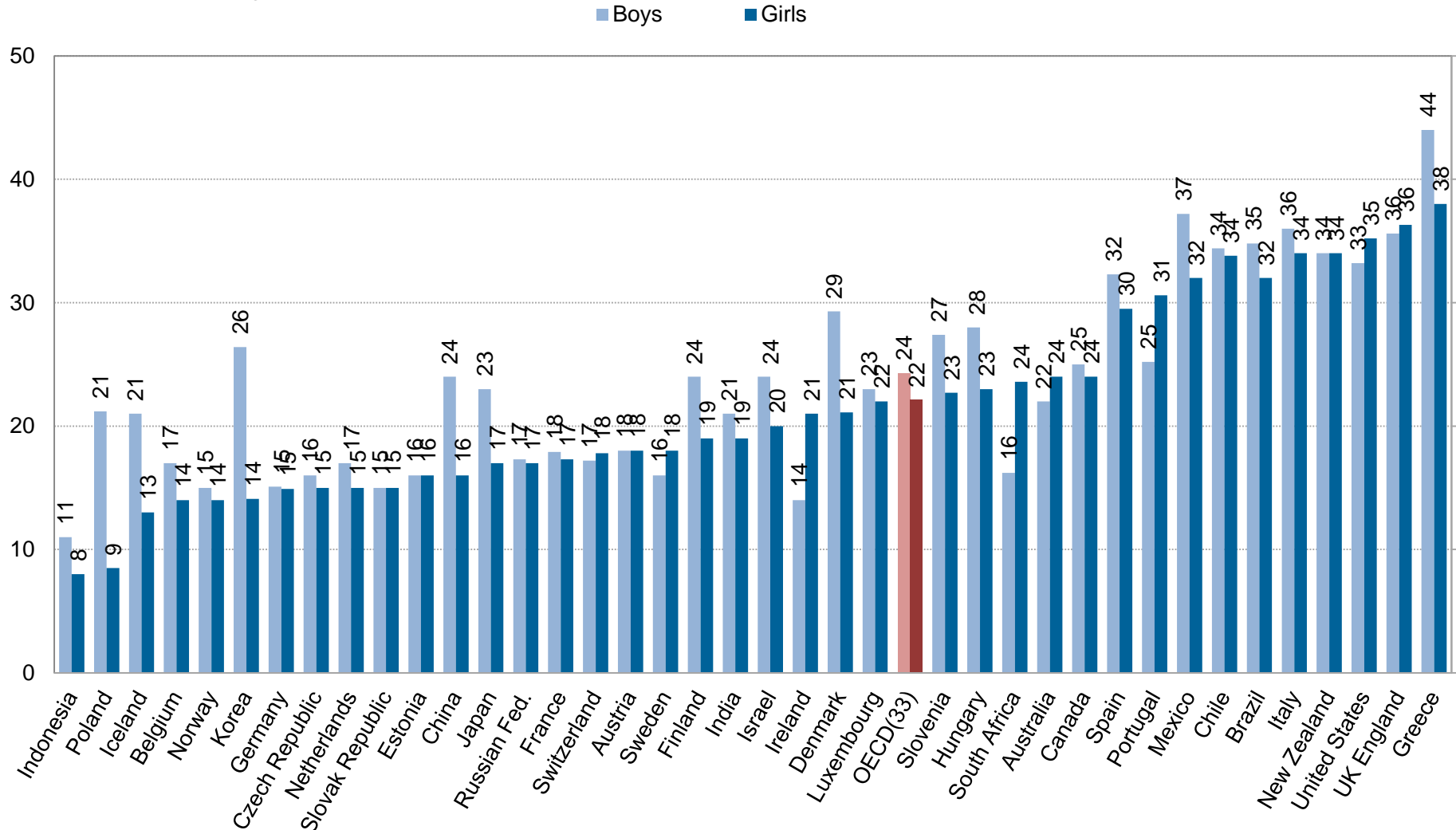
Source: World Obesity Federation (2015), KIGGS (2003-06) for Germany and KNHANES (2013) for Korea.

Rising health expenditure

Total public and private expenditure on health as a percentage of GDP, in 1960, 1985 and 2010
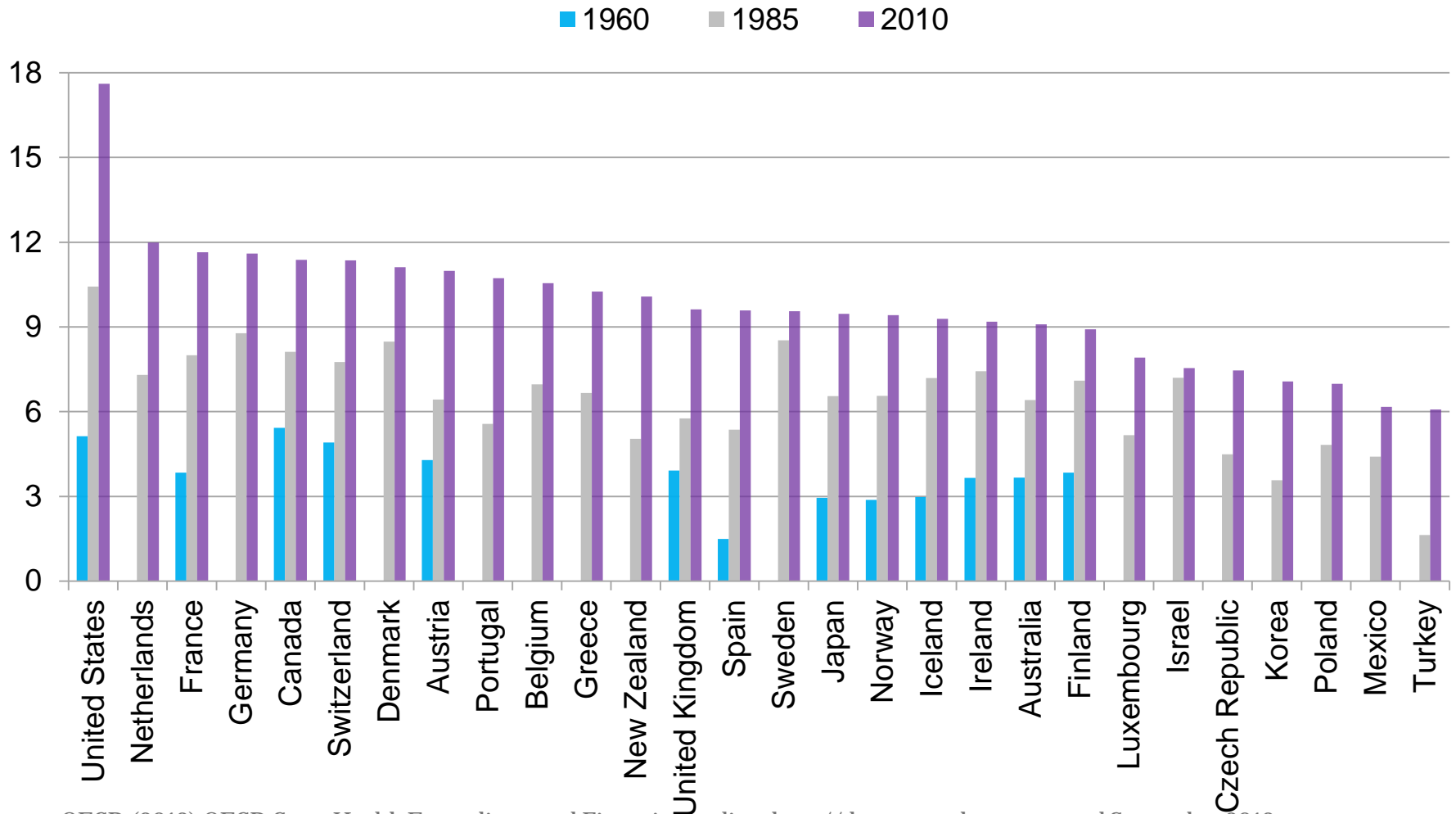
Global increase of terrorist incidents

In 2013, 60 per cent of all terrorist attacks occurred in five countries; Iraq, Afghanistan, Pakistan, Nigeria and Syria. However the rest of the world suffered a 54 per cent increase in terrorist incidents in 2013.

Terrorist incidents, 2000–2013
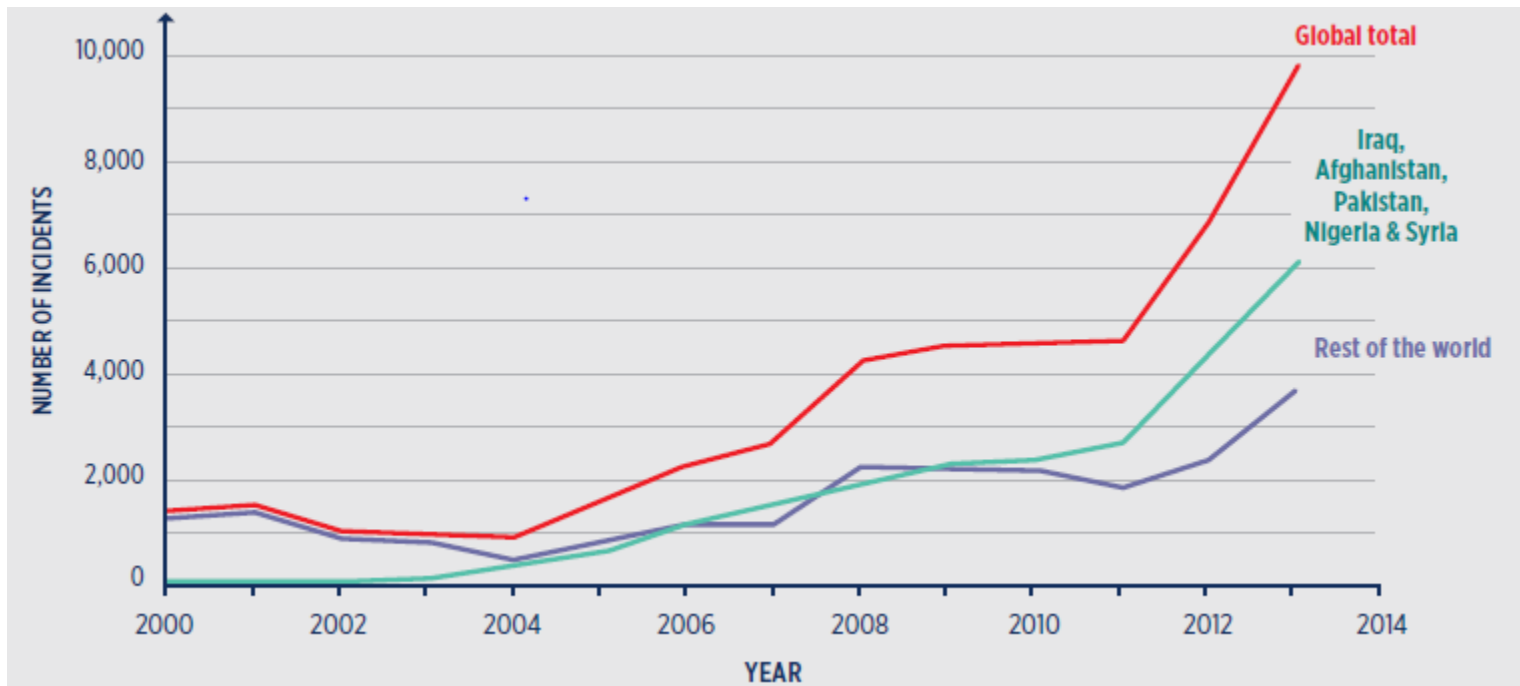
All of these issues are inter-connected!

Climate change

Urbanization

Rise of chronic diseases

Rising geographic mobility

Biodiversity loss and ecosystem collapse

Failure of climate-change adaptation

Extreme weather events

Water crises

Food crises

Weakening of international governance

Growing middle class in emerging economies

Failure of urban planning

Failure of national governance

Profound social instability

Rise of hyperconnectivity

Interstate conflict

Unemployment or underemployment

State collapse or crisis

Fiscal crises

Rising income disparity

Increasing national sentiment

Ageing population

Increasing polarization of societies

Shifts in power

Source: WEF 2015 Global Risks

Survey respondents were asked to select between three and six trends and to identify for each the risk they believe is most interconnected.

What does all this mean for education?

Education 2030

Furthered OECD Education 2030 Framework Work-in-Progress!

Competency : the ability to mobilise **knowledge, skills, attitudes and values** in a particular context (DeSeCo).

Action: students are agent for change as well as agent to keep the world in balance. Action should drive towards the overarching goal/outcome → well-being (individual and society).

Furthered OECD Education 2030 Framework
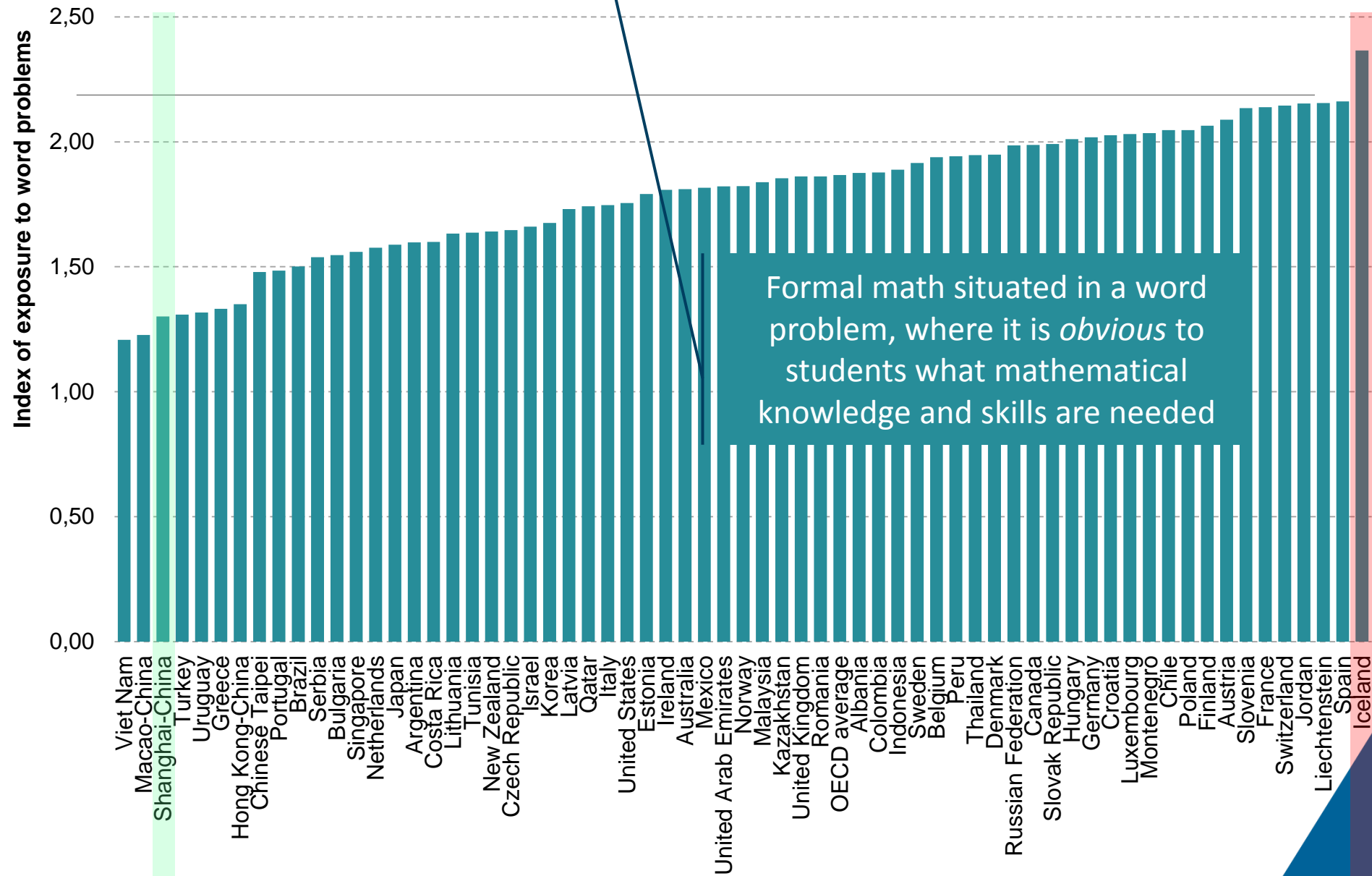
?

Math teaching ≠ math teaching

reason mathematically and understand, formulate, employ and interpret mathematical concepts, facts and procedures

Focus on word problems

Fig I.3.1a

Index of exposure to word problems

Formal math situated in a word problem, where it is *obvious* to students what mathematical knowledge and skills are needed

Viet Nam, Macao-China, Shanghai-China, Turkey, Uruguay, Greece, Hong Kong-China, Chinese Taipei, Portugal, Brazil, Serbia, Bulgaria, Singapore, Netherlands, Japan, Argentina, Costa Rica, Lithuania, Tunisia, New Zealand, Czech Republic, Israel, Korea, Latvia, Qatar, Italy, United States, Estonia, Ireland, Australia, Mexico, United Arab Emirates, Norway, Malaysia, Kazakhstan, United Kingdom, Romania, OECD average, Albania, Colombia, Indonesia, Sweden, Belgium, Peru, Thailand, Denmark, Russian Federation, Canada, Slovak Republic, Hungary, Germany, Croatia, Luxembourg, Montenegro, Chile, Poland, Finland, Austria, Slovenia, France, Switzerland, Jordan, Liechtenstein, Spain, Iceland

Focus on conceptual understanding

Fig I.3.1b

?

Interdisciplinary competency

≠

Creating a course on that subject

Exposure and financial literacy

Performance in financial literacy (y-axis)

- 625
- 575
- 525
- 475
- 425
- 375

x-axis: 40, 50, 60, 70, 80, 90, 100

Data points labeled:
- Shanghai-China
- Flemish Community (Belgium)
- Australia
- New Zealand
- Czech Republic
- Poland
- OECD average-13
- Latvia
- United States
- Russian Federation
- Slovak Republic
- Colombia

% of students in schools where the principal reports that financial literacy is available for at least 2 years

Furthered OECD Education 2030 Framework
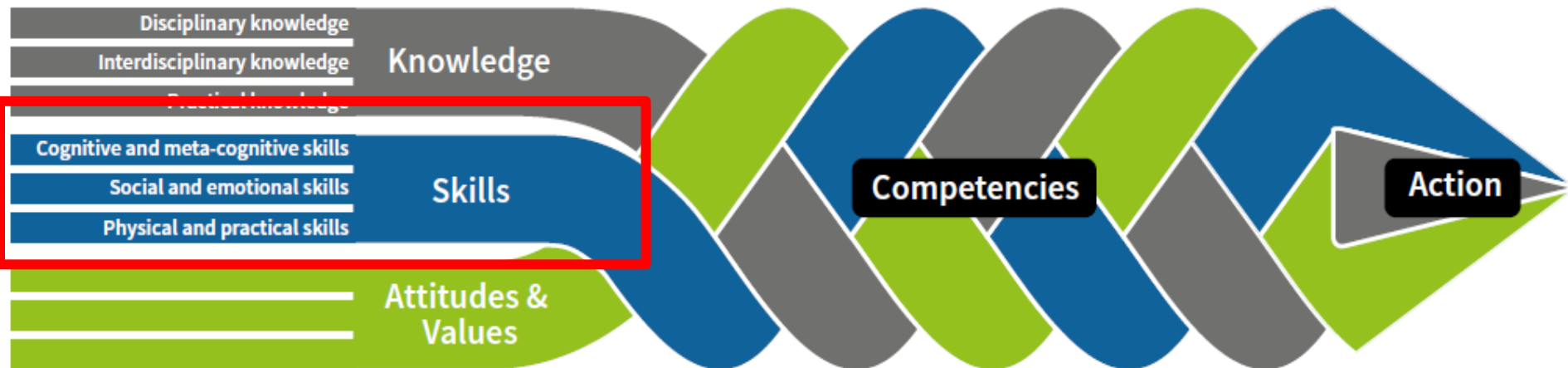
Examples of cognitive & meta-cognitive skills – currently under review

|			
Problem Solving	**Creativity**	**Critical Thinking**	**Analytical skills**
Learning strategies	**Self-efficacy**	**Planning**	**Monitoring**
Evaluating	**Synthesising**	**Systems thinking**	**Foresight thinking**
Higher order thinking skills	**Data gathering**	**Self-awareness**	**Etc.**

Sources: Green - OECD (2015), Lippman, L. et all. (2015), Literature review of 34 empirical studies, Kauz et al.(2014),

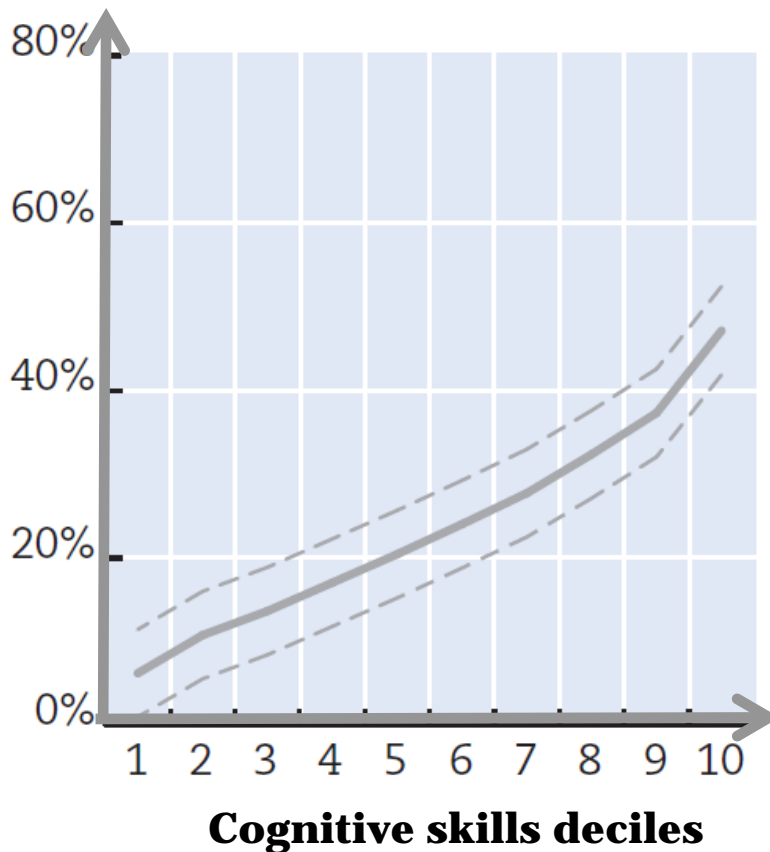|		
Communication	**Cooperation**	**Collaboration**
Initiative taking	**Completing tasks**	**Emotional control**
Empathy	**Self-discipline**	**Etc.**

Sources: Green - OECD (2015), Lippman, L. et all. (2015), Literature review of 34 empirical studies, Kauz et al.(2014),
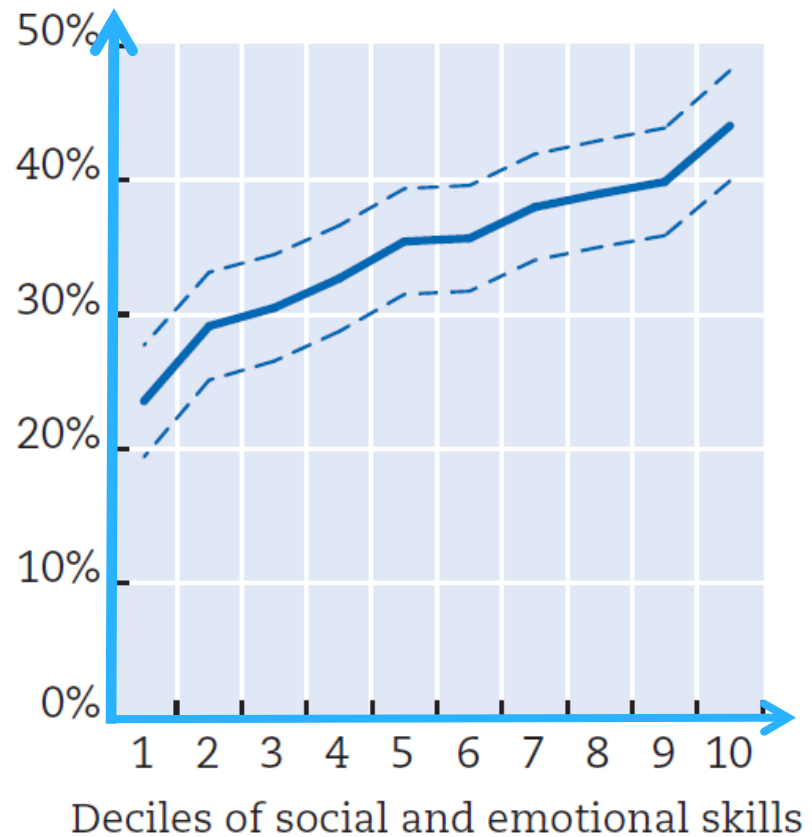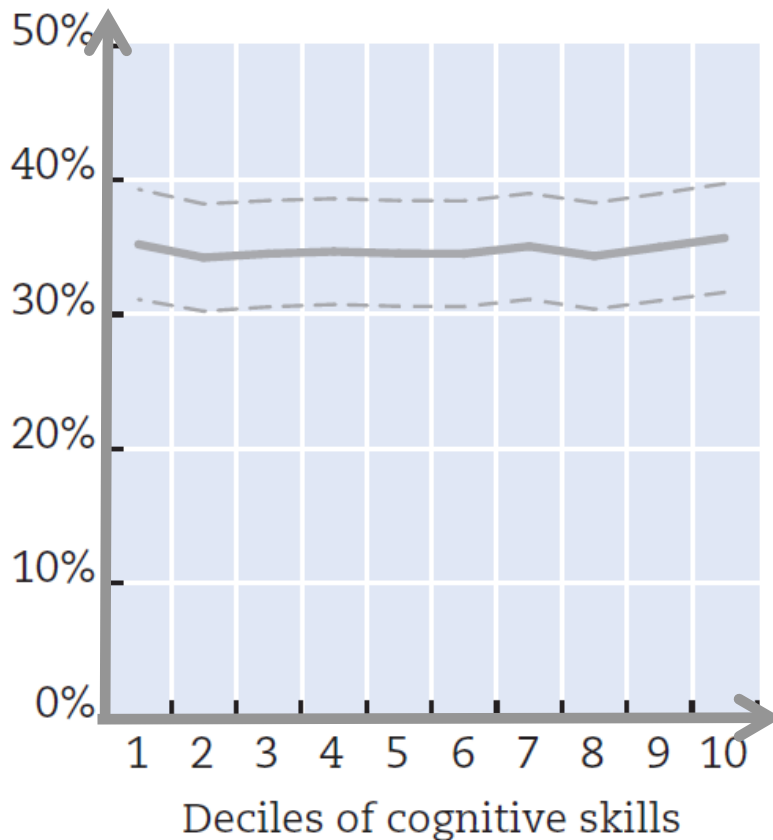
College Completion (USA)

Cognitive skills deciles

Social & emotional skills deciles

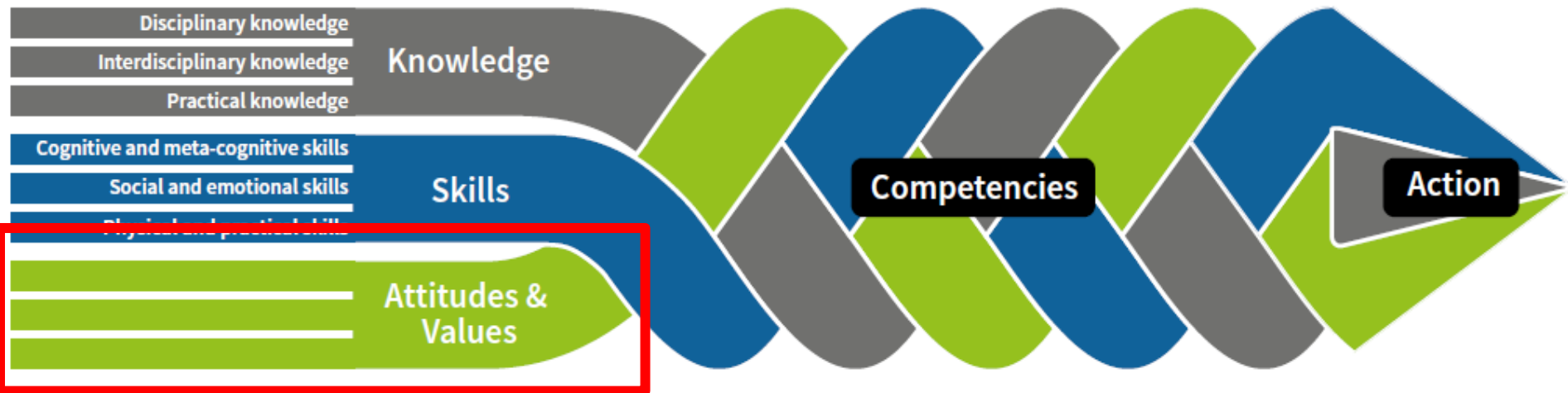OECD (2015)
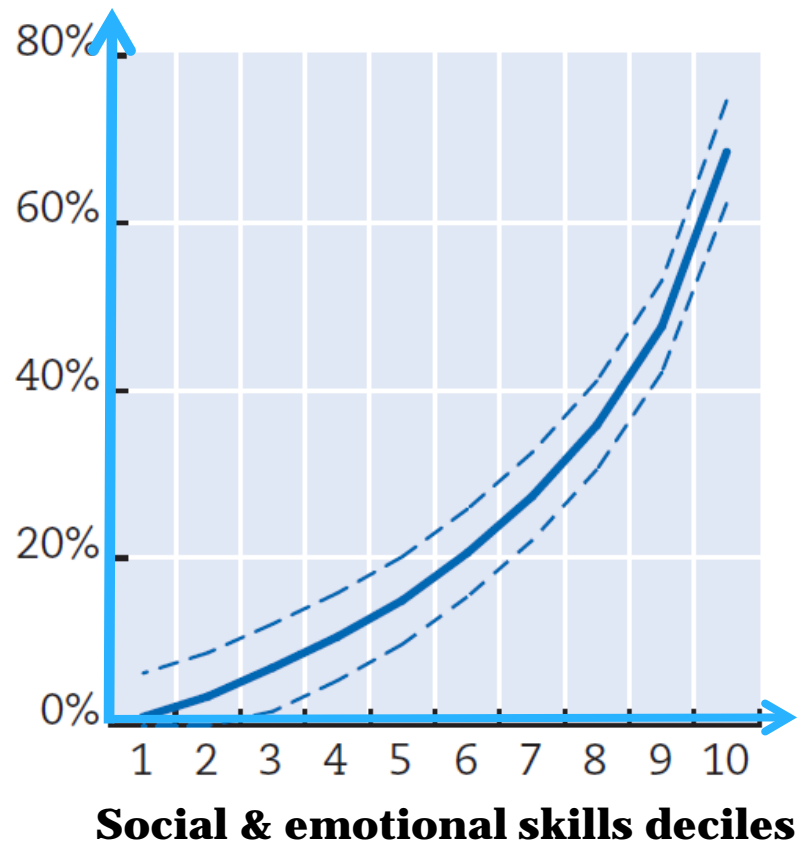
Happy at 20 (New Zealand)

Examples of physical & practical skills – currently under review

Kinesthetic ability (the ability to coordinate movement) dexterity, motor skills	**Ability to use physical tools, operations, functions including manual skills for professions (ICT, new machines, surgery)**
Ability to use s using physical tools for life skills (e.g. giving first aid, cooking)	**Etc**

Disciplinary knowledge
Interdisciplinary knowledge
Practical knowledge

Knowledge

Cognitive and meta-cognitive skills
Social and emotional skills
Physical and practical skills

Skills

Attitudes & Values

Competencies

Action

Examples of attitudes & values – currently under review

Respect	**Trust**	**Responsibility**
Self-confident	**Growth mindset**	**Etc.**

Sources: Green - OECD (2015), Lippman, L. et all. (2015), Literature review of 34 empirical studies, Kauz et al.(2014),

"Responsibiltiy" and "bullying at 15" (Korea)

Source: KYPS

Left chart: y-axis 0%–20%, x-axis "Deciles of cognitive skills" (1–10)

Right chart: y-axis 0%–20%, x-axis "Deciles of responsibility" (1–10)

OECD (2015)
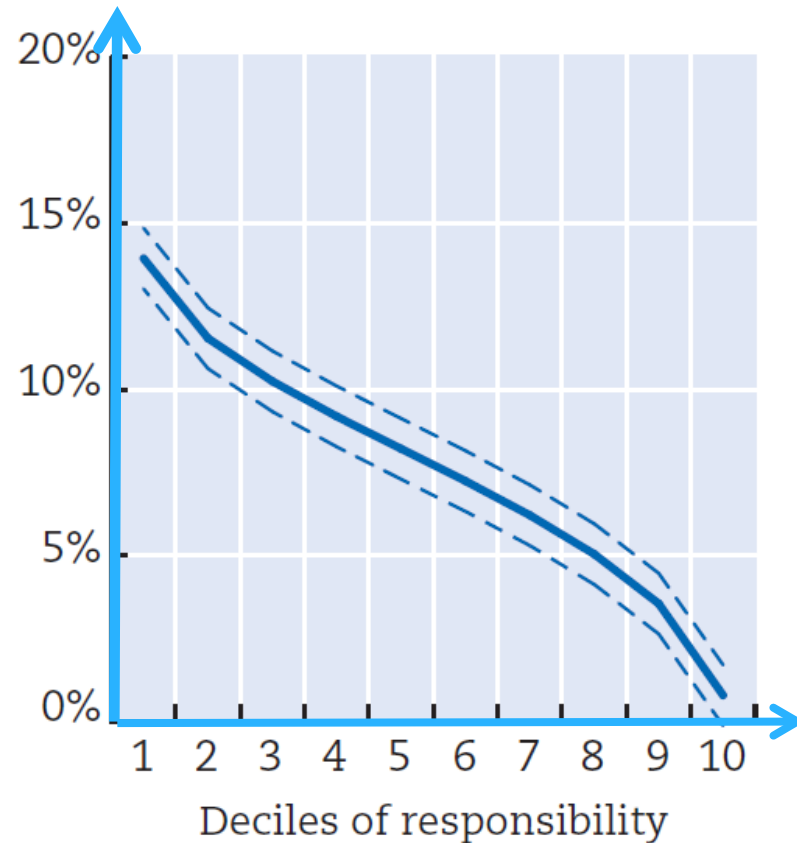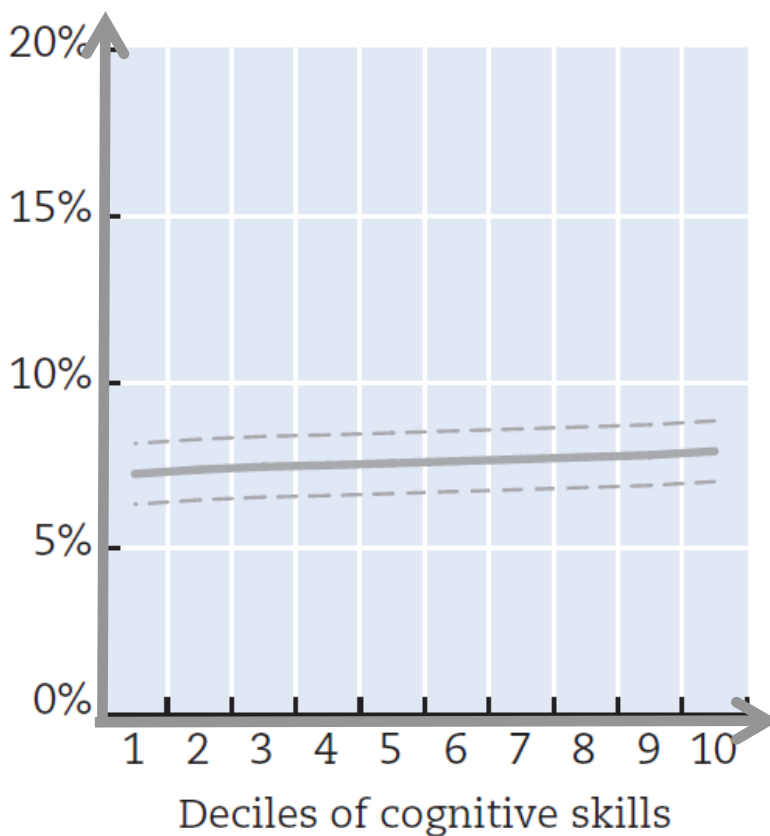
"Math performance" and "Subject-specific responsibility" (perceived self-responsibility for failure in mathematics)

Fig III.3.6
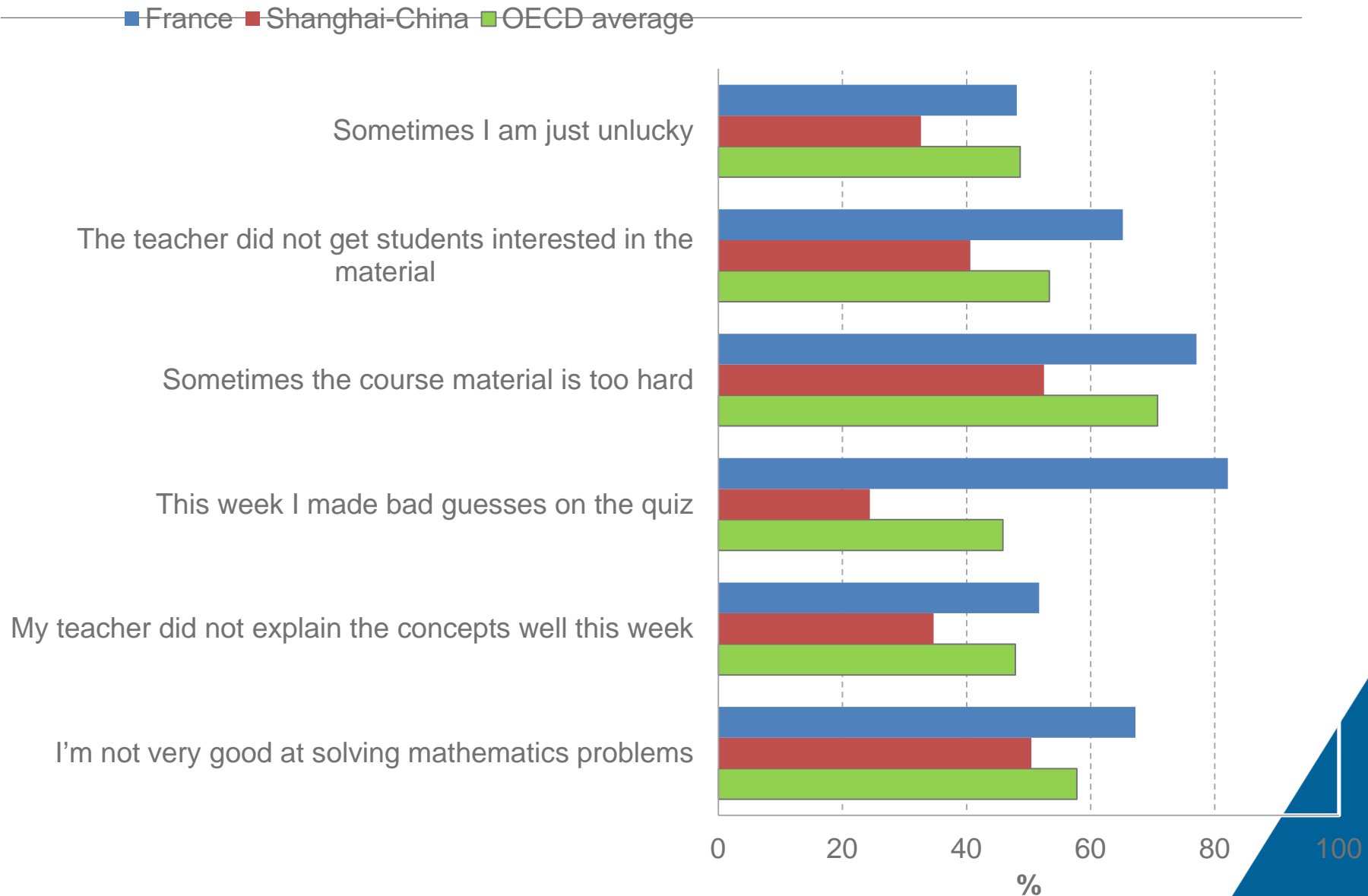
Core competency

= **?** =

Subject-specific competency

key concepts

= **?** =

subject-specific contents

Example - British Columbia, Canada:
Core competency + **curricular competency** (Do)
Content knowledge (Know) + **big ideas** (Understand)

Core competency:
- Creative thinking
- Critical thinking
- Communication
- Positive personal & cultural identify
- Personal awareness and responsibility
- Social responsibility

How can you get be a partner of the project?

- **International 2030 learning framework (competency)**
  - Governments – Take part in the OECD meetings (twice per year)
  - Experts – constructs analysis (when relevant, meetings)
  - Stakeholders (businesses, school network, student organisations or other relevant networks) – Survey for future competencies in need (when relevant, meetings)
- **Comparative curriculum analysis**
  - Governments, government-related institutes, universities with the government' approval - curriculum questionnaire
  - Academic experts – comparative curriculum analysis
  - School networks – triangulation by case studies on curriculum implementation